TRANSFORMATION

STRUCTURALISM

21ST CENTURY UNIVERSITY IN A 70'S STRUCTURALIST BUILDING

VALERY ESHUIS
HERITAGE & ARCHITECTURE
FUTURE OF STRUCTURALISM
TUDELFT
CONTENT

PART 1 CONTEXT

PART 2 STRUCTURALISM

PART 3 21ST CENTURY UNIVERSITY ANALYSIS

PART 4 CULTURAL VALUE

PART 5 INTERVENTION AND TECHNICAL CONSEQUENCES

CONCLUSION
PART 1

CONTEXT | INTRODUCING EXISTING SITUATION
RESEARCH QUESTION

HOW CAN THE FACULTY OF HUMANITIES BE RE-USED TO ACCOMMODATE THE 21ST CENTURY UNIVERSITY REQUIREMENTS AND HOUSING FOR STUDENTS, WHILST AT THE SAME TIME MAINTAINING ITS CHARACTER AS A STRUCTURALIST BUILDING?
RESEARCH QUESTION

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PART 2

STRUCTURALISM | BUILDING DESIGN, ARCHITECT
1. UNITS

2. SOCIAL INTERACTION

3. OPEN ENDED

4. BUILDING AS A CITY

5. SEQUENCE OF SPACE
STRUCTURALISM | 1/5 UNITS

HUMAN SIZE GRID | TYPES OF STUDY SPACES | TYPICAL FLOOR PLAN | BUILDING CLUSTERS | ENTIRE COMPLEX

50 m²
4 x 1.25 = 7.20

LECTURE HALL
LECTURE HALL
SUB-HALL
SUB-HALL

7.20

X 15
SKETCH- IMPRESSION BY JOOP VAN STIGT (JOOP VAN STIGT, 1970S)
STRUCTURALISM | 5/5 SEQUENCE OF SPACE

CITY SQUARE    COURTYARD    PRIVATE ROOM

PUBLIC    COLLECTIVE    PRIVATE
STRUCTURALISM | ARCHIVAL DRAWING ANALYSIS
X 30% CIRCULATION

X MOSTLY THE SAME TYPE OFFICES
PART 3

21st CENTURY UNIVERSITY ANALYSIS
70s
MEMORIZING FACTS

21ST CENTURY
ABILITY TO PROBLEM SOLVING AND APPLYING KNOWLEDGE TO NEW SITUATIONS

The Vibeeng School / Arkitema Architects
THE MOST SOCALLY USEFUL THING TO LEARN(ING) IS THE PROCESS OF LEARNING

- MALCOM KNOWLES
COLLABORATION | INFORMAL STUDY SPACES | LECTURE HALL WITH HEIGHT | ATRIUM
<table>
<thead>
<tr>
<th>TYPE OF SPACE</th>
<th>original BVO according to KCAP (sqm)</th>
<th>space % of total building</th>
<th>New program total sqm</th>
<th>new program % of building</th>
<th>sqm now - sqm original</th>
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<tbody>
<tr>
<td>total building clusters</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>offices</td>
<td>9700</td>
<td>57.06%</td>
<td>5000</td>
<td>26.70%</td>
<td>-4700</td>
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<tr>
<td>vergaderzaal/ meeting rooms</td>
<td>90</td>
<td>0.53%</td>
<td>200</td>
<td>1.07%</td>
<td>110</td>
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<tr>
<td>ondersteunende kantoorruimte</td>
<td>80</td>
<td>0.47%</td>
<td>80</td>
<td>0.43%</td>
<td>0</td>
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<tr>
<td>lecture hall/ lecture theatres (flat)/ teaching space</td>
<td>1100</td>
<td>6.47%</td>
<td>1100</td>
<td>5.87%</td>
<td>0</td>
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<tr>
<td>lecture theatre with height</td>
<td>0</td>
<td>0.00%</td>
<td>200</td>
<td>1.07%</td>
<td>200</td>
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<tr>
<td>utility space/ berging</td>
<td>450</td>
<td>2.65%</td>
<td>450</td>
<td>2.40%</td>
<td>0</td>
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<tr>
<td>sanitary spaces</td>
<td>800</td>
<td>4.71%</td>
<td>1200</td>
<td>6.41%</td>
<td>400</td>
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<tr>
<td>horizontal circulation space</td>
<td>2200</td>
<td>12.94%</td>
<td>1800</td>
<td>9.61%</td>
<td>-400</td>
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<tr>
<td>vertical circulation space</td>
<td>400</td>
<td>2.35%</td>
<td>400</td>
<td>2.14%</td>
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<tr>
<td>outside space (balconies, perrons)</td>
<td>150</td>
<td>0.88%</td>
<td>150</td>
<td>0.80%</td>
<td>0</td>
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<tr>
<td>collaboration space</td>
<td>0</td>
<td>0.00%</td>
<td>3000</td>
<td>16.02%</td>
<td>3000</td>
</tr>
<tr>
<td>restaurant/ cafe</td>
<td>400</td>
<td>2.35%</td>
<td>700</td>
<td>3.74%</td>
<td>300</td>
</tr>
<tr>
<td>incubator space</td>
<td>0</td>
<td>0.00%</td>
<td>700</td>
<td>3.74%</td>
<td>700</td>
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<tr>
<td>front desk</td>
<td>0</td>
<td>0.00%</td>
<td>30</td>
<td>0.16%</td>
<td>30</td>
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<tr>
<td>courtyard/ outside learning space</td>
<td>0</td>
<td>0.00%</td>
<td>700</td>
<td>3.74%</td>
<td>700</td>
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<tr>
<td>galleries</td>
<td>311</td>
<td>1.83%</td>
<td>450</td>
<td>2.40%</td>
<td>139</td>
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<tr>
<td>Living / Rooms/ student hotel rooms/ home base</td>
<td>0</td>
<td>0.00%</td>
<td>1200</td>
<td>6.41%</td>
<td>1200</td>
</tr>
<tr>
<td>rousources/ supply store</td>
<td>0</td>
<td>0.00%</td>
<td>0</td>
<td>0.00%</td>
<td>0</td>
</tr>
<tr>
<td>installations</td>
<td>450</td>
<td>2.65%</td>
<td>200</td>
<td>1.07%</td>
<td>-250</td>
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<tr>
<td>Library</td>
<td>870</td>
<td>5.12%</td>
<td>870</td>
<td>4.64%</td>
<td>0</td>
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<tr>
<td>breakout space</td>
<td>0</td>
<td>0.00%</td>
<td>300</td>
<td>1.60%</td>
<td>300</td>
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<tr>
<td>Total building cluster</td>
<td>17001</td>
<td>100.00%</td>
<td>18730</td>
<td>100.00%</td>
<td>1729</td>
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INTRODUCING 21ST CENTURY UNIVERSITY INTO FACULTY OF HUMANITIES

SOUTH | UNIVERSITY

NORTH |
- STUDENT HOUSING
- EXISTING LIBRARY
- PUBLIC SPACES
INTERVENTION PROPOSAL | DIAGRAM

1 | UNITING
   - UNIFYING
   - ENTRANCE HALL
   - WAYFINDING

2 | NEW WAYS OF LEARNING
   - FLEXIBLE SPACES
   - LECTURE HALL
   - INFORMAL STUDY SPACES

3 | STUDENT LIVING
THE PERMEABILITY FROM THE BRIDGES
THE SWUARES INFRONT OF THE BUILDINGS
CULTURAL VALUE ANALYSIS | FACADE

BRICKS BASE AND WINDOW SHAPES  REFERENCE OTHER BUILDINGS AROUND WITTE SINGEL

HEAVY BASE AND LIGHT TOP

MUSHROOM COLUMNS
WHEN YOU KNOW THE BOUNDARIES SET BY ARCHITECTURAL VALUES YOU DETERMINE THE PLAYING FIELD IN WHICH YOU CAN DESIGN

- PROF. IR. W. DE JONGE
PART 5

INTERVENTION
- REMOVE ALL DIVIDING WALLS
- REPLACE COURTYARDS
- CREATE ENTRANCE BUILDING FOR UNIVERSITY
- REPLACE ALL WINDOWS
- ADD INSULATION
INTERVENTION

1| UNITING

UNIFYING

ENTRANCE HALL

WAYFINDING

2 | NEW WAYS OF LEARNING

FLEXIBLE SPACES

LECTURE HALL

INFORMAL STUDY SPACES

3 | STUDENT LIVING

UNITING
INTERVENTION | IMPRESSION UNIFY CLUSTERS

Former Drawing Courtyard intervention

TECHNICAL INTERVENTION ATRIUM W/ ARCHITECTURE

CONNECTION W/ EXISTING ARCHITECTURE

CONTRAST BETWEEN OLD AND NEW

VIEWS TOWARDS THE CONTEXT

APT. "A" A=26,26m²

APT. "A" A=26,26m²

APT. "A" A=26,26m²

APTO. "F" PISO PORCELANATO A=20,12m²

APT. "A" A=26,26m²

APT. "A" A=26,26m²
INTERVENTION| NEW COLUMN CARRIES TRUSS
INTERVENTION | CONSEQUENCES
DETAIL 1 | NEW ATRIUM ROOF
DETAIL 3 | CURTAIN WALL SUNKEN INTO GROUND
INTERVENTION | INTERVENTION | CONSEQUENCES NEW ATRIUM ROOF
INTERVENTION | SOLAR STUDY

SUMMER

SUMMER solstice (June)

13:00u

WINTER

WINTER solstice (December)

13:00u

22:00u

4:00u

17:00u

9:00u
Summer solstice (June) 60°

Winter solstice (December) 15°
INTERVENTION | PROGRAM ADJUSTMENT TO SOLAR STUDY

New galeries with courtyard study spaces

- Short-term study spaces shorter than 2 hours due to limited natural sunlight; artificial lighting required

- Epoxy flooring finish 5 mm (to hold up to high-traffic conditions; easy to clean)
- Cement with floor heating 50 mm
- Pressure-resistant insulation 100 mm
- Existing concrete floor 260 mm
- Lowered ceiling

New window frames for facades along courtyard due to change in size of windows and additional windows along higher ceilings.

- Window frames must be the same dimensions (or smaller) as original to fit in between existing columns.

- Waterproof layer 5 mm
- Insulation 100 mm
- Steel roof profile 5 mm (staalplaat)
- Steel I-beams 220 mm
- Steel truss 1440 mm

Glass partition wall in line with construction (950 mm beams second floor)

50 mm height adjustment to ceiling so the new lowered ceiling is not in existing windows.
INTERVENTION | SUN STUDY COURTYARD

Zonnestand July 7 - 12:00u
INTERVENTION | LECTURE HALL

1 | UNITING
   - ENTRANCE HALL
   - WAYFINDING

2 | NEW WAYS OF LEARNING
   - FLEXIBLE SPACES
   - LECTURE HALL
   - INFORMAL STUDY SPACES

3 | STUDENT LIVING
INTERVENTION | LECTURE HALL

3200MM

2500MM
INTERVENTION | LECTURE HALL | MORE HEIGHT SAME EXTERIOR
INTERVENTION | FACADE NORTH
brandwerende bekleding
afwerklaag cement
bovenwapping in het werk aangebracht
tralieliggers
200 mm constructieve hoogte beton
vooraf vervaardigde schil met
benodigde wapping aka bekistingsplaat
bevestiging
vliesgevel
gezette staalplaat
glas ballustrade
aluminium daktrim
Composiet onderligger voor terrasplanken
stelblok
Composiet terrasplanken
dakbedekking
Constructie dakterras ballustrade
CONSEQUENCES | MAKING NEW SHAFTS FOR VENTILATION

- primary steel reinforcement
- secondary steel reinforcement
- mushroom columns
- make new installation rooms slightly larger
- new holes in between steel reinforcement for toilets
CONSEQUENCES | MAKING NEW SHAFTS FOR VENTILATION

The previous ventilation shafts are not sufficient to accommodate the louver channels. Extra holes need to be made. The distance between the grating is approximately 7200mm / 8 (see diagram) = 900mm. The dimensions of the shafts can be halved by ventilating the two halves of each building (each cluster) separately. The vertical shaft dimensions are then 0.1667 / 820 = [900 - 80mm (space for cables)] = 0.82m.

0.1667m² / 0.82 = 0.247m².

BRON: CONSTRUCTIE WAPENING ARTIKEL FACULTEIT VAN LETTEREN
FLOOR HEATING THROUGH GEOTHERMAL ENERGY (GROUND SOURCE HEATING AND COOLING)

HEAT RECOVERY SYSTEM (WTW) | AIR SUPPLY HEATING AND COOLING

INSULATION

VENTILATION SCHEME SUMMER SITUATION

VENTILATION SCHEME WINTER SITUATION
APT. "A"  
A=26,26m²

APT. "F"  
PISO PORCELANATO  
A=20,12m²

APT. "A"  
A=26,26m²

APT. "F"  
PISO PORCELANATO  
A=20,12m²
INTERVENTION | MATERIALISATION GALLERIES
AIMS MAIN ENTRANCE HALL:
- OPEN TO THE CORNERS
- LARGE VOID TO ENHANCE ENTRANCE EXPERIENCE AND IMMEDIATE OVERVIEW OF THE BUILDING
- LARGE COLLABORATION SPACE/MEETING POINT AT THE HEART OF THE COMPLEX
- MAIN WAYFINDING CORE

ROOF TERRACE CAFE WITH VIEWS
INTERVENTION | FLOOR PLAN ENTRANCE HALL

BACK ENTRANCE

FRONT ENTRANCE
INTERVENTION IMPRESSION ENTRANCE HALL

Entrance building facade July 7 - 12:00u
INTERVENTION | ENTRANCE BUILDING FACADE

EXISTING FACADE

NEW ENTRANCE HALL FACADE
INTERVENTION | MATERIALISATION

EXISTING
- RED BRICK
- WASHED CONCRETE
- BLUE PAINTED WOOD
- DARK WOOD | INTERIOR

NEW
- ALUMINUM RED COPPER FINISH
- RED CARPET
- GALLERIES
- WHITE PLASTERBOARD | INTERIOR
- WOOD ATRIUM CEILING AND GALERIES

SOLID SURFACE MARLAN SHEETS (MIX VAN POLYESTERHARS & MINERALE VULSTOFFEN)
INTERVENTION | MATERIAL ENTRANCE HALL

Alucobond aluminium composite material (finish of copper red brown to go with existing facade material of red bricks)

1:5 detail new entrance hall facade

1.5 horizontal detail facade

EXISTING

NEW
CONCLUSION

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THANK YOU!

QUESTIONS?
TIEING CLUSTERS OF BUILDINGS TOGETHER

1 university building, 1 student hotel, 1 building of public facilities

DEMOLITION - ENTRANCE BUILDING

JE COMPT HET GEBOUW BINNEN VAN ALLE KANTEN

THE SEQUENCE OF SPACE GAAT VAN GROOT NAAR KLEIN. DE BEOEDING OM ALS 1 GEBOUW TE FUNCTIONEREN LUKT NIET VANWEGE DE SCALA AAN MANIEREN OM HET GEBOUW TOE TE TREDEN

DE STRATEN ZIJN BELANGRIJK VOOR HET VERHAAL. DEZE BREKEN HET GEBOUW OP IN STUKKEN (KUA MAATVOERING PAST BETER IN URBAN CONTEXT.

EN DE ZICHTLIJNEN DOOR DE STRATEN NAAR DE BIBLIOTHEEK EN DE STAD VERBONDEN LAAT MET DE ACHTERLIGGENDE BEBOUWEN IS BELANGRIJK.

JVS WILT 1 GEBOUW

NU BENADER JE HET GEBOUW ZO

Je kunt het gebouw binnen van alle kanten

De straten zijn belangrijk voor het verhaal. Deze breken het gebouw op in stukken (kua maatvoering past beter in urban context.

En de zichtlijnen door de straten naar de bibliotheek en de stad verbonden laat met de achterliggende gebouwen is belangrijk.

JVS WILT 1 GEBOUW

EIGELIJK IS 1 HOOFDENTREE NODIG OM DE ROUTING TE VERDUidelijken.

Dit wordt dan wel gedaan met een curtain wall om de visuele zichtlijnen te behouden

Om de entree te maken op de hoek (a: sequence of space en b symmetry), connectie met campus (c) en het overzicht van de routing (b) te behouden moeten deels van de façade weggehaald worden.

Sequence of space ook ruimtelijk ervaren en nieuwe trapgaten, en liftacht, vloeren open breken.
North: One of my project’s aims is to make the courtyard of the university function according to the architect’s initial ambitions. Along with the building now functioning as 1 whole now Make one large internal connected route

**1. Intertwine buildings in stedelijk weefsel**

**ENTRANCES**

- North: Create 1 main entrance and connect the individual clusters to make them function as 1 unit
- South: Create a closed off atrium for a private entrance into the student hotel
- Main entrance for student hotel check-in, public resturant and breakout zones open to public.

**2. LIVELY AND/ OR FUNCTIONAL COURTYARDS**

North: Intervene in courtyards to make it feel enclosed and thus more private. Including the public facilities and library to be accessible for the student housing. At the same time not making library and Public facilities want to go into the student housing.