THE HULL INSTITUTE
3D bioprinting laboratory - Nijmegen

Charles Hull "the father of 3D printing"
Index

Research
- Fascination
- Research question
- Laboratory

Location
- Orientation
- Analysis
- Values

Brief

Design
- Concept
- Central element
- Construction
- Design
- Walk through

Reflection
Craft in an Information Society
Paradigm shifts

1. Anything is craft and everything is done by hand.  
2. Separation between craft and fine art.  
3. Craft is separated from machine production.  
4. Distinction between machine manufacturing and hand finishing.  
5. Technology creating novel form through new materials using new production processes.

<13 c.  
14 c.  
19 c.  
20 c.  
>21 c.
Paradigm shifts

1. Anything is craft and everything is done by hand. <13 c.
2. Separation between craft en fine art. 14 c.
3. Craft is separated from machine production. 19 c.
4. Distinction between machine manufacturing and hand finishing. 20 c.
5. Technology creating novel form through new materials >21 c. using new production processes.
Paradigm shifts

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intimate relation with the **TOOLS**
GUILD education system
“Future craft is a new design methodology that considers how the processes of design and production can be used to reflect new social values and to change dominant cultural processes.”

DESIGN APPROACH

BIOMIMICRY
SELF-ASSEMBLY
MINI-TISSUE
MATERIAL SELECTION

SYNTHETIC POLYMERS
NATURAL POLYMERS
EXTRACELLULAR MATRIX
CELL SELECTION

DIFFERENTIATED CELLS
PLURPOTENT STEM CELLS
MULTIPOTENT STEM CELLS
BIOPRINTING

INKJET
MICROEXTRUSION
LASER ASSISTED
APPLICATION

IMPLANTATION
MATURATION
IN VITRO TESTING
“WHAT KIND OF ARCHITECTURAL ENVIRONMENT ENCOURAGES AND STIMULATES THE DEVELOPMENT OF 3D BIOPRINTING.”
THE LABORATORY
“A building that is clearly designed for sustained intellectual, spiritual and aesthetic life.

A place where a variety of people can meet and can be distracted by a different kind of beauty.”
ADAPTABLE

San Diego, CA, United States | Salk Institute for Biological Studies | Louis Kahn | 1965
CONNECTED
<table>
<thead>
<tr>
<th>Program:</th>
<th>Area:</th>
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<tbody>
<tr>
<td><strong>Laboratory:</strong></td>
<td></td>
</tr>
<tr>
<td>Medical Engineering</td>
<td>~1050 m²</td>
</tr>
<tr>
<td>Biomaterial Science</td>
<td>~1050 m²</td>
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<tr>
<td>Cell Biology</td>
<td>~1050 m²</td>
</tr>
<tr>
<td>Biophysics</td>
<td>~1050 m²</td>
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<tr>
<td>Open work tables</td>
<td>~3100 m²</td>
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<tr>
<td>Medicine / Imaging</td>
<td>~160 m²</td>
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<tr>
<td>Treatment Rooms</td>
<td>~50 m²</td>
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<tr>
<td>Imaging Rooms</td>
<td>~110 m²</td>
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<tr>
<td>Offices / Administration</td>
<td>~540 m²</td>
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<tr>
<td>Conference / Presentation</td>
<td>~340 m²</td>
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<tr>
<td>Changing rooms</td>
<td>~750 m²</td>
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<tr>
<td>Open worktables</td>
<td>~800 m²</td>
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<tr>
<td><strong>Subtotal ~9890 m²</strong></td>
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<tr>
<td><strong>Public Space:</strong></td>
<td></td>
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<tr>
<td>Reception</td>
<td>~45 m²</td>
</tr>
<tr>
<td>Lecture Hall</td>
<td>~150 m²</td>
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<tr>
<td>Library</td>
<td>~400 m²</td>
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<tr>
<td>Coffee Bar / Lounge</td>
<td>~350 m²</td>
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<tr>
<td>Public Facilities</td>
<td>~850 m²</td>
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<tr>
<td>Public open workspaces</td>
<td>~800 m²</td>
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<tr>
<td><strong>Subtotal ~2595 m²</strong></td>
<td></td>
</tr>
<tr>
<td>Traffic space [~25%]</td>
<td>~4250 m²</td>
</tr>
<tr>
<td><strong>Total ~16750 m²</strong></td>
<td></td>
</tr>
</tbody>
</table>
1. Copper Cladding
2. Ventilation Shaft
3. Insulation 174mm
4. UNP 120
5. Fibre Reinforced Polymer Mesh
16. HEA 150
Walkthrough
Sustainable
The setup is for a strong and social and creative environment where 3D bioprinting can attract the attention it deserves.
THANK YOU FOR YOUR TIME
1. Copper Cladding
2. Ventilation Shaft
3. Insulation 174mm
4. UNP 120
5. Fibre Reinforced Polymer Mesh
6. Horizontal Window Frame 300 x 80
7. Glue Laminated Timber Frame
8. Vertical Window Frame 300 x 80
9. IPE 550
10. Facade Column 150 x 740
11. Steel Cable attached to horizontal IPE160
12. Perforated Corten Steel
13. Cast Foundation
14. Rainwater Slit Drain
15. Screed Concrete Flooring
16. HEA 150
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Construction plan 1:200

0 2 3 4 m.1

0 2 3 4 m.1

Detail 8

THE HULL INSTITUTE

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RWC Moors

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