

1:1 Interactive Architecture Prototypes Workshop

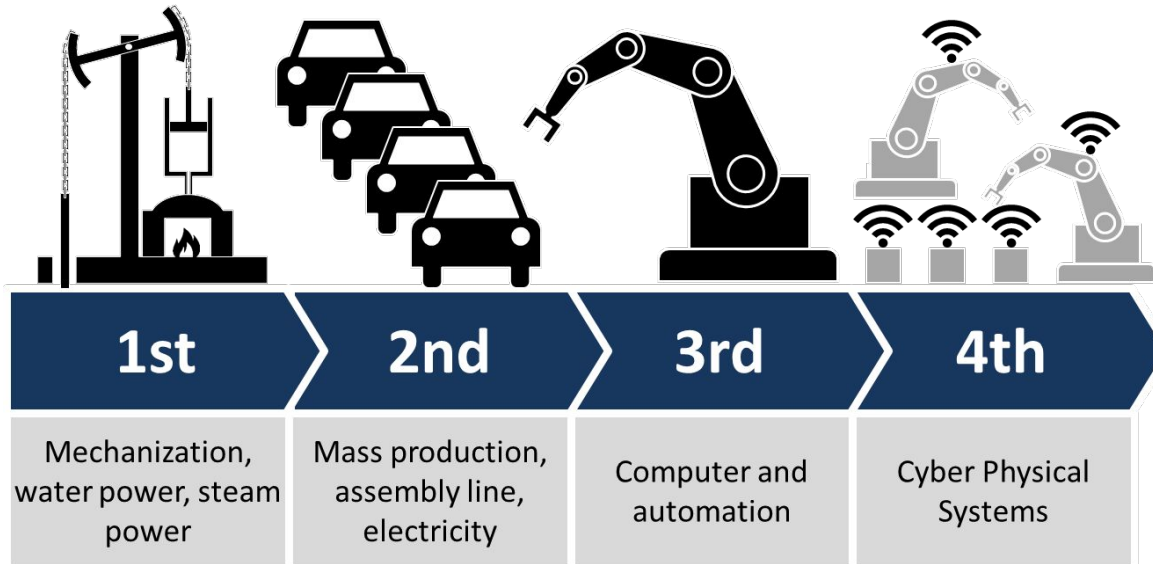
G3

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Content

- Representative architectural examples for each industrial revolution
- Additive and subtractive methods for the pavilion

The industrial revolutions 2-4



Industrial revolution 2.0 in building environment

- 1870-1914
- New processes in the steel industry-> cheap steel which allowed building larger bridges and skyscrapers

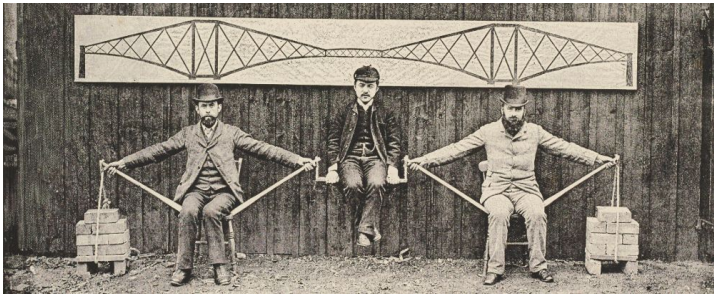
Industrial revolution 2.0 in building environment - emulate old style

- 1891: Wainwright Building - Chicago - Louis Sullivan
 - One of the first skyscrapers
 - Steel structure-> brick appearance
 - Imitating existing style



Industrial revolution 2.0 in building environment - new style

- 1890: Forth bridge - John Fowler en Benjamin Baker
 - Tension strength of steel is taken as advantage



Industrial revolution 3.0

- Between the late 1950s and 1970s - present day
- Invention of electronics and computers -> use of computers to aid in the creation, modification, analysis, or optimization of a design

Industrial revolution 3.0 in building environment - emulate old style

- Sagrada Familia completing - Barcelona - Present architects/Antoni Gaudi
 - CAD&3D printing prototypes
 - Gaudi's original design



Industrial revolution 3.0 in building environment - new style

- 1997: Guggenheim Museum - Bilbao, Spain - Frank Gehry
 - a fusion of complex, swirling forms and captivating materiality that responds to an intricate program and an industrial urban context
 - Deconstructivism
 - CATIA V3 software



Industrial revolution 4.0

- Now-future
- Trend of automation and data exchange in manufacturing technologies
- Design principles:
 - **Interconnection** between devices, sensors, machines and people
 - **Technical assistance** for visualizing information and physically support humans

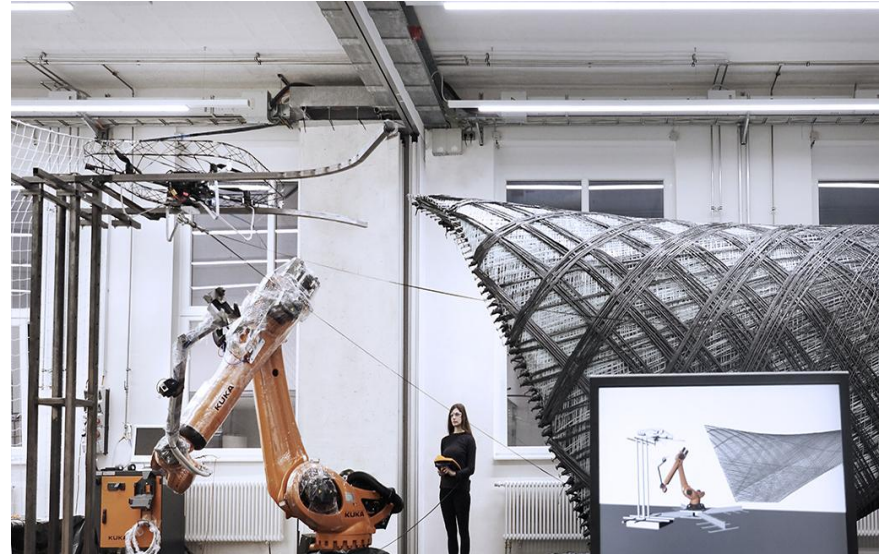
Industrial revolution 4.0 in building environment - emulate old style

- Robotic collaboration in timber construction - ETH Zürich
 - Creating a form which can be handmade



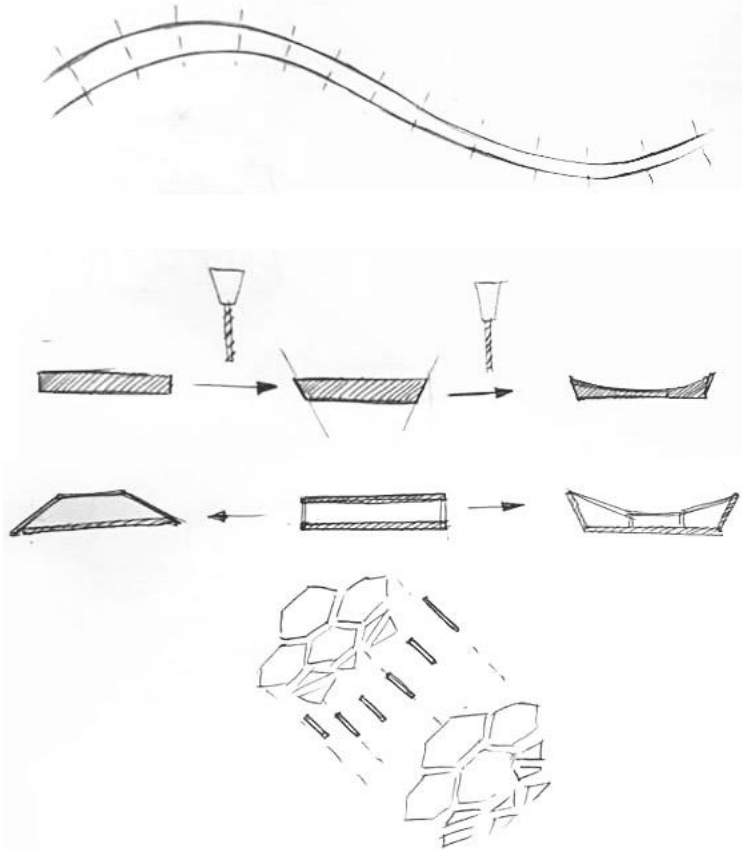
Industrial revolution 4.0 in building environment - new style

- 2017 - ICD/ITKE Research Pavilion - ICD/ITKE
 - Interaction between robots



1. TESSALATING - solid/hollow panels

Ex. La Voute de la Fevre, ICD/ITKE Pavillion 2011



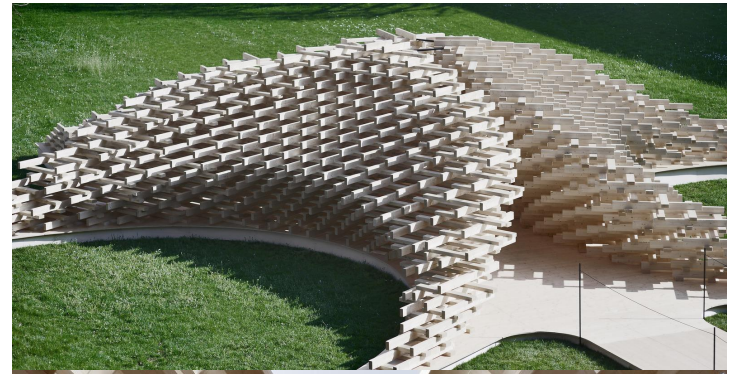
1 layer

2 layers



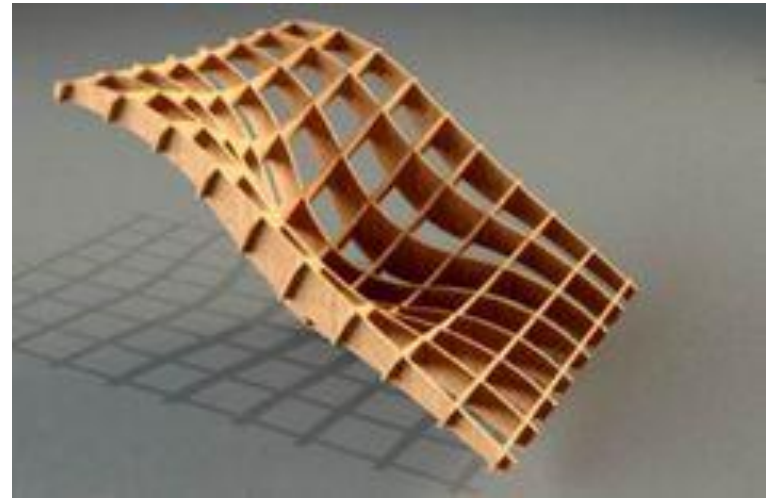
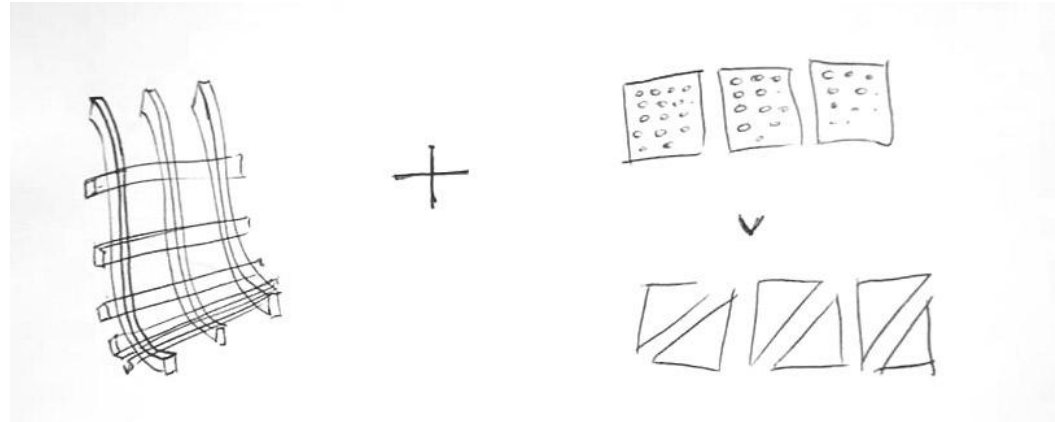
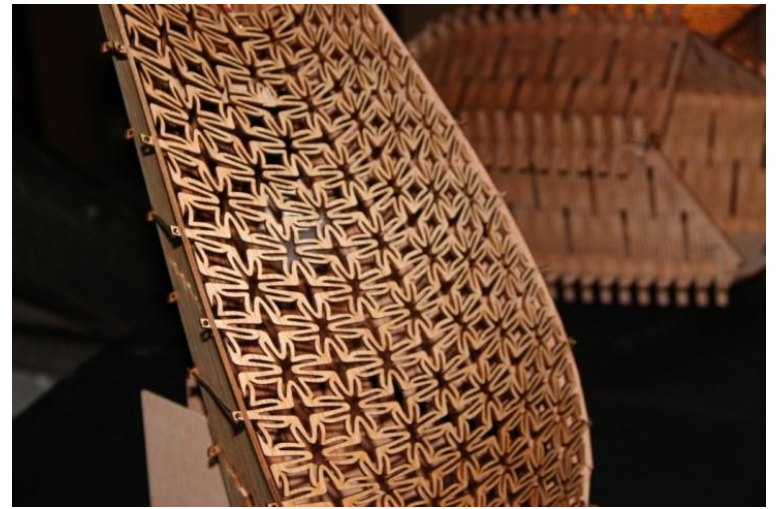
2. CUBOID BEAMS STACKING

Ex. Future Space Pavillion , Y Installation



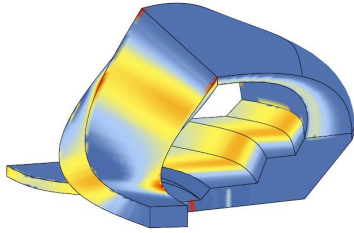
3. GRID (GRATE) + BENDING PANELS

Preferably fabric

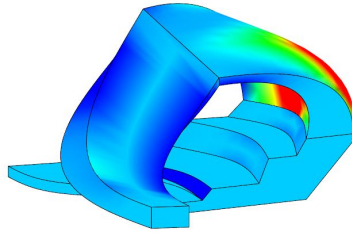


4. SPACE FRAME

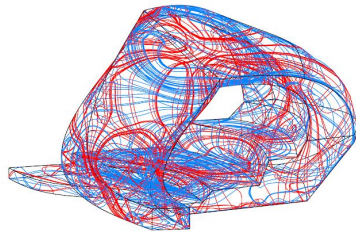
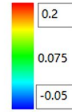




GH Gaussian curvature (last workshop) (?)



Rhino Gaussian curvature analysis



Karamba 3D tension(red) & compression(blue)

