rethinking the role of the Bauhaus master
#1 Bauhaus Research
#2 Site
#3 Functions
#4 Design Simulation
#5 Design Experiments
#6 Design
#7 Materiality
#8 Algorithm
#9 Construction
#10 Conclusion
#11 Reflection
#1 Bauhaus Research
Research Question: Theory
Who is the new Bauhaus master?
bauhaus reuniting arts

drama workshop
plastic arts workshop
metal workshop
the educational system
new method of production

handcraft

robotcraft
new kind of architect
Research Question: Process
How can the user be involved in the design process?
new kind of student
new kind of master

young teaching old

old teaching young
CONCLUSION

dynamic realtionship student and master
new bauhaus university building
#2 Site
In 2019, Germany will be celebrating the centenary of the founding of the Bauhaus, together with partners all over the world. Founded in Weimar in 1919, relocated to Dessau in 1925 and closed in Berlin under pressure from the Nazis in 1933, the school of design only existed for a total of 14 years. Despite this, the influence of the Bauhaus continues right down to the present day all over the world.

Timeline of Bauhaus

In 2019, Germany will be celebrating the centenary of the founding of the Bauhaus, together with partners all over the world. Founded in Weimar in 1919, relocated to Dessau in 1925 and closed in Berlin under pressure from the Nazis in 1933, the school of design only existed for a total of 14 years. Despite this, the influence of the Bauhaus continues right down to the present day all over the world.
dessau - bauhaus buildings

bauhaus master house - walter gropius

employment office - walter gropius

bauhaus university building - walter gropius

dessau-törten housing estate - walter gropius
plot

project context + bauhaus houses and university
plot - axis, contrast

context axis + contrasting buildings
contemporary master houses

banal housing
banal housing context
CONCLUSION

Dessau context
Contemporary language contrast
#3 Functions
4 distinctive parts of developing

First element of the development is that of self-awareness. Schools offer a lot of tutoring, guidance and knowledge. However it is the students themselves that has to understand this, not just following what the teacher is saying but being able to understand this.

This element is represented in the building with residencies. Similar to the studios in the Bauhaus, there will be 25 studios/bedrooms for students/teachers to stay. This can be 1 day, 10 days or 1 year. Depending on what courses they are following.

Second element in the development is that of learning. Simply learning from another, may it be a teacher, a book in the library or a tutor that is shown on the internet. From the perspective of hierarchy there is still a division within these functions, a division between the teacher teaching and the student learning.

Within learning there are the lecture and class rooms. Offices for personnel of the school or mentors of the students. Shops where students and the public is able to buy materials, books, print posters, or buy furniture made in the school. Finally there is the library that houses two methods of learning, books and the internet.

Third element in developing is that of collaboration. As discussed before, the students needs to be able to collaborate and learn from each other. Introducing the horizontal hierarchy, in which all the students are equal.

The goal of collaborating is the workshop, similar to that of the Bauhaus system. Achieving perspective and aspects through different workshops. However with the introduction of robotics, this is being defined as the final goal of the workshop. Where Bauhaus envisioned their products to be mass-produced, the current products should be mass-customized.

The workshop rooms are multifunctional however, depending on the courses of a given year, the spaces are able to adapt. However there are fixed rooms with the method/tools to be used within the workshops. Such as woodworking, machines, and robotic lab.

Last element in the development is that of sharing. Inviting the public within the design process. Where the Bauhaus had their exhibitions, theatre plays or parties, the school will have similar elements.

The collaboration that happened between the students, will here take place between student and public. Teaching the student to become the choral architectur, the ‘middle-man’. Defining the question, where the public will bring the response.
### Room Details

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<th>Adjacency Matrix</th>
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dynamic network

network 1

network 2

network 3
CONCLUSION

4 distinctive parts of development
Dynamic Network
Continuous Space
#4 Macro Design Simulation
design reference
Ryue Nishizawa - Moriyama house

moriyama house - Ryue Nishizawa
changing functions changes circulation
internal pocket gardens
public edge gradually towards private garden

moriyama house - plan
moriyama house photo
moriyama house - axonometric view
algorithm design

adjacency scheme

distance algorithm
clustering algorithm
distribution algorithm
clustering algorithm
simulation results

simulation_ID: 1
simulation type: clustering
attraction: 1.40
repulsion: 0.06
area: 0.20

simulation_ID: 2
simulation type: distance
attraction: 1.22
repulsion: 0.03
area: 0.20

simulation_ID: 3
simulation type: distance
attraction: 1.42
repulsion: 0.05
area: 0.30

simulation_ID: 4
simulation type: distribution
attraction: 1.34
repulsion: 0.04
area: 0.30

simulation_ID: 5
simulation type: clustering
attraction: 1.20
repulsion: 0.01
area: 0.30

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simulation type: clustering
attraction: 1.09
repulsion: 0.03
area: 0.30

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attraction: 1.47
repulsion: 0.06
area: 0.20

simulation_ID: 8
simulation type: distribution
attraction: 1.19
repulsion: 0.04
area: 0.30
circulation
pocket parks
functional distribution
CONCLUSION

Functional Distribution
Macro Design concepts
#5 Macro Design Development
Kazuyo Sejima - Nishinoyama House
pros:
- well-defined landscape fragments
- dynamic circulation
Steven Holl - Institute for Contemporary Art
pros:
- branching of geometry
- flow from context
Peter Eisenman - Virtual House
pros:
- flow from landscape to building
- clustering of spaces
- fragmented facades
#6 Macro Design
liberation
GOAL

MASS PRODUCTION
ORTHOGONAL
UNIFORM
LIBERATION OF PLAN

MASS CUSTOMIZATION
CURVILINEAR
LOCALLY INFORMED
INTEGRATION OF PLAN
Research Question: Design
How to design a topological transformation from orthogonal to freeform?
orthogonal > freeform
surface triangulation

orthogonal

freeform
gradient

orthogonal

freeform
anchor points
- functional distribution
- moriyama house reference
context grid
grid offset
resulting design
collaborating
sharing 
staying facilities
learning

collaborating
informed extrusion of landscape

extrusion amount

high 5m

low 1m
landscape circulation

semi-public square

public square
landscape
circulation

external circulation

internal circulation
#7 Materiality
context + sustainability
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<th>CLT</th>
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steam bending wood
Research Question: Construction
How to construct a locally informed envelope?
#8 Algorithm
mesh subdivision
mesh subdivision
stress lines

red: compression
blue: tension
vectors locally informed
vectors locally informed
utilization
utilization amount
high 100%
low 0%
guide curves
mesh agents

agent parameter

mesh area / 2 = amount mesh agents
baked curves

curve parameter
point influence = radius of 100 points
field element weight = 1
angle based culling

curvature

high

180

low

90
Design experiments

Beam Parameter

- **Angle**: 0-180
- **Width**: 60mm
- **Height**: 60mm

Beam Parameter

- **Angle**: 0-180
- **Width**: 60mm
- **Height**: 60mm

Beam Parameter

- **Angle**: 0-180
- **Width**: 140mm
- **Height**: 100mm

Beam Parameter

- **Angle**: 0-100
  - 0 - 100: 60mm x 100mm
  - 110 - 140: 100mm x 200mm
  - 140 - 180: 140mm x 300mm
openings

freeform opening

medium density

high density

beam parameter

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resulting curves
angle analysis

culling parameter

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curve culling

c\(\text{cur}\)
\(\text{an}^\circ\)
\(110\)
\(140\)
curve extension

extension parameter

length

cp = control point

distance = v(last cp - second last cp) * 2
angle analysis
robotic bending
beam fixation
perpendicular joints
culling joints

culling parameter
distance
cull joint if proximity < 1m or # > 2
#9 Construction
x-ray log scanning
robotic cutting
robotic drilling + robotic bending
robot human(cyborg) collaboration
assembly
exploded construction
CONCLUSION

#1 Theory      - Who is the new bauhaus master?
#2 Process     - How can the user be involved in the design process?
#3 Design      - How to design topological transformation through one material?
#4 Construction - How to construct a locally informed envelope?
Theory

- Who is the new bauhaus master?

young teaching old

old teaching young

staying  learning  collaborating  sharing
Process - How can the user be involved in the design process?
Design - How to design a topological transformation from orthogonal to freeform?
Construction - How to construct a locally informed envelope?
REFLECTION