DIA x TUD
workshop 2

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Demographic Studies about Dessau

-3.0%	-16.2%	6.9	14.9
Relative population development since 2011	Relative population development 2012 to 2030	Births (per 1,000 Ew.)	Deaths (per 1,000 Ew.)

-8	35.5	35.4	0.2
Natural balance (per 1,000 Ew.)	Inflows (per 1,000 Ew.)	Departures (per 1,000 Ew.)	Migration balance (per 1,000 Ew.)

2.5	49.8	12.5%	22.0
Educational migration (per 1,000 Ew.)	Average age (years)	Share under 18 years old	Share 65-79 years old

Development site

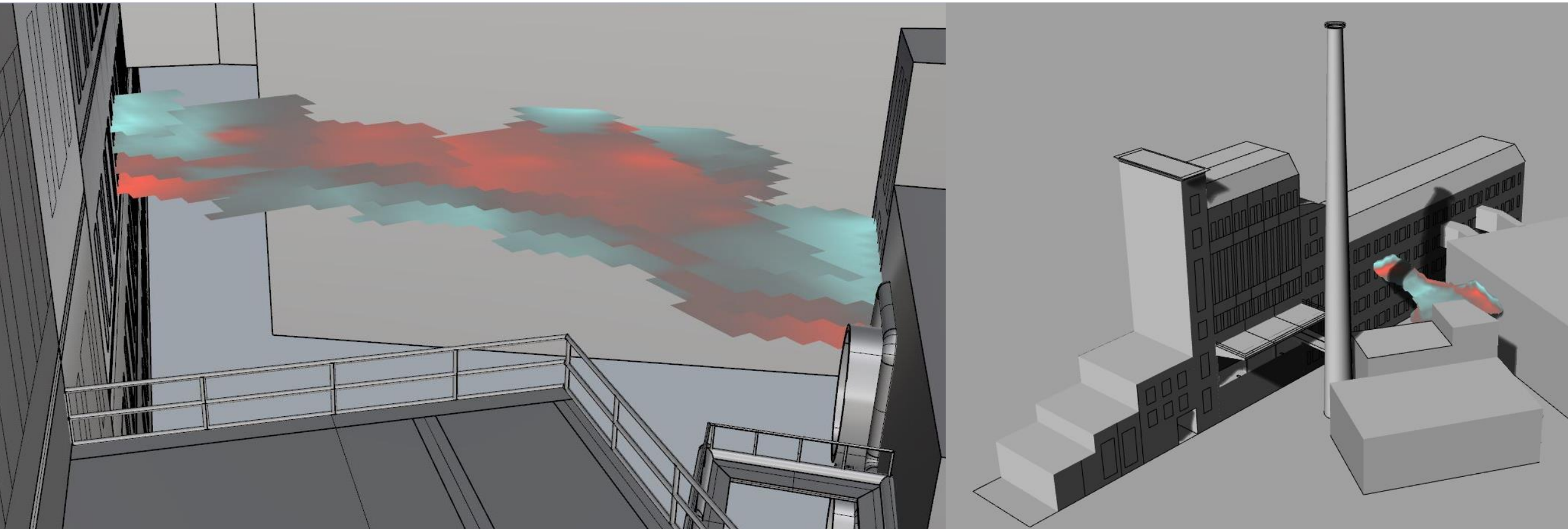

Gärungschemie Dessau GmbH

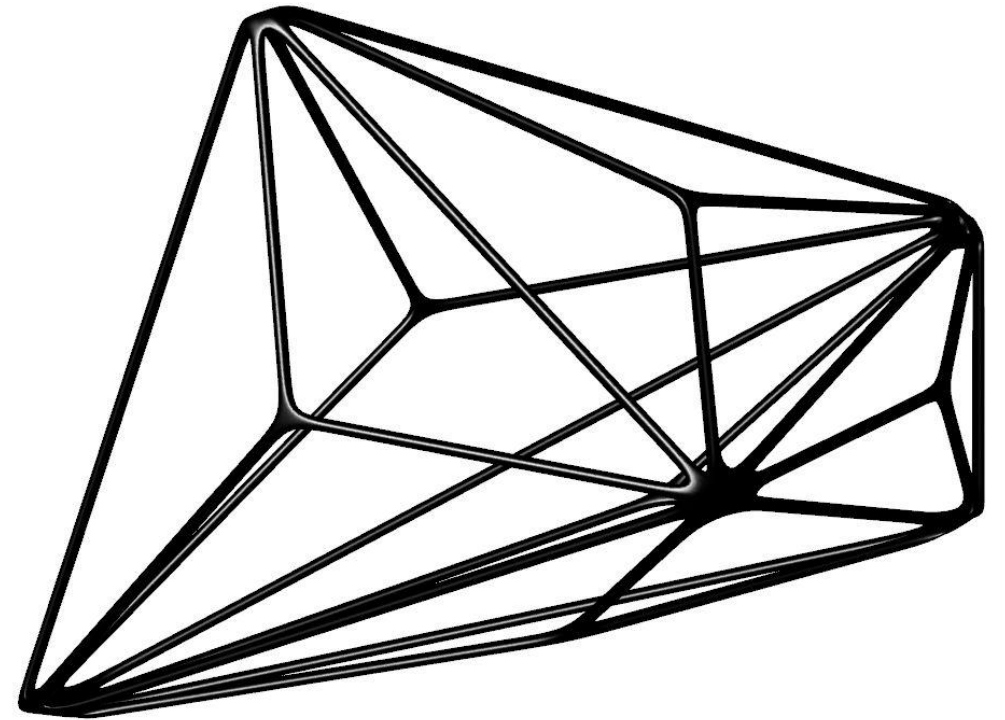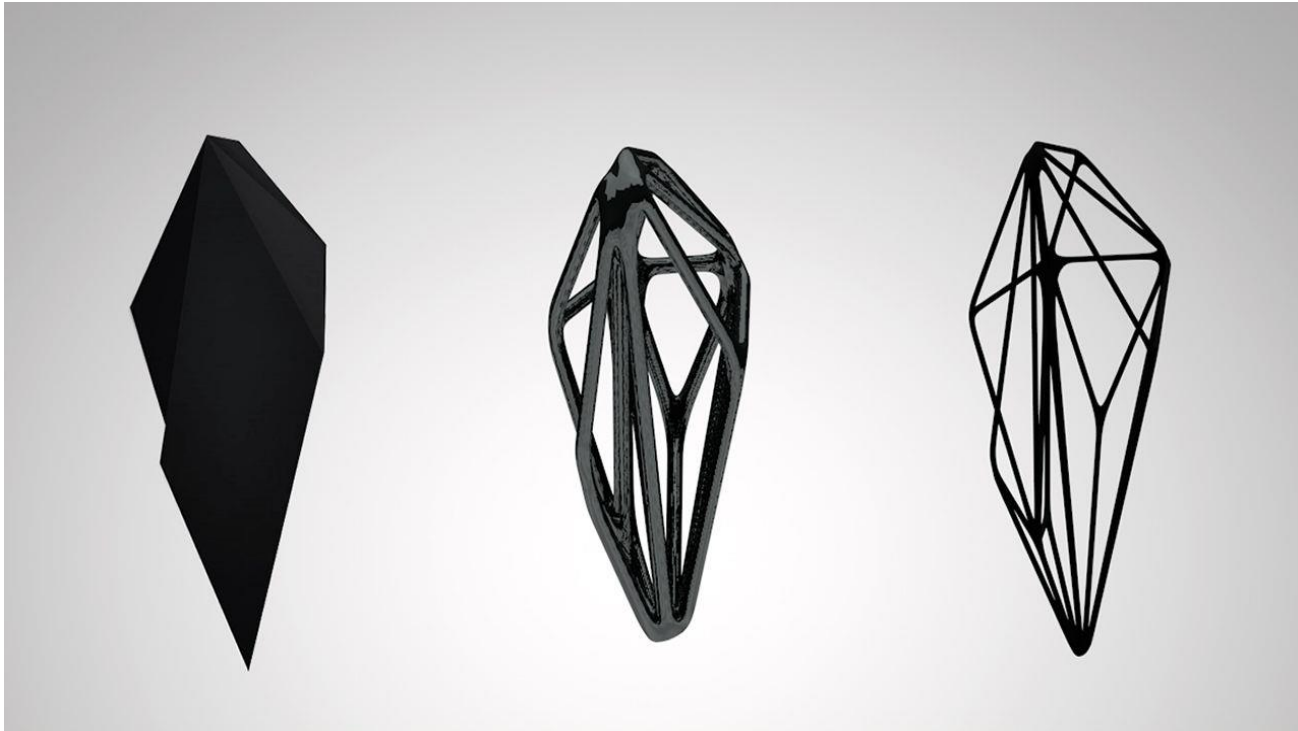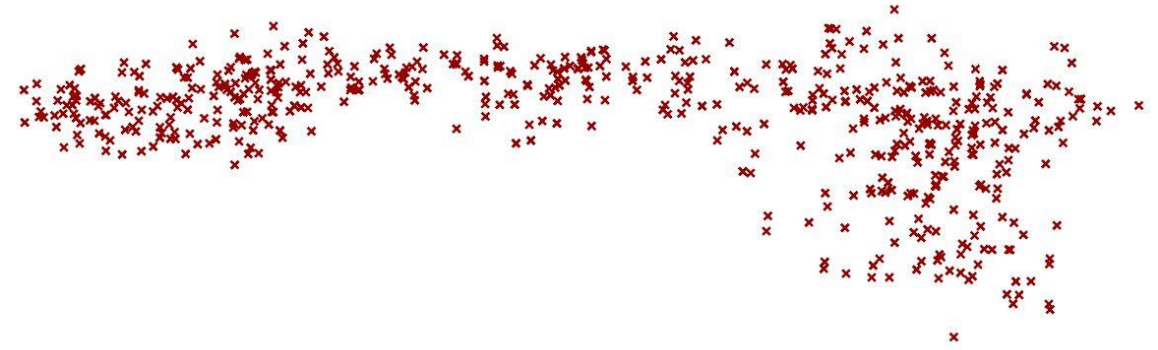# Macro scale – structural analysis
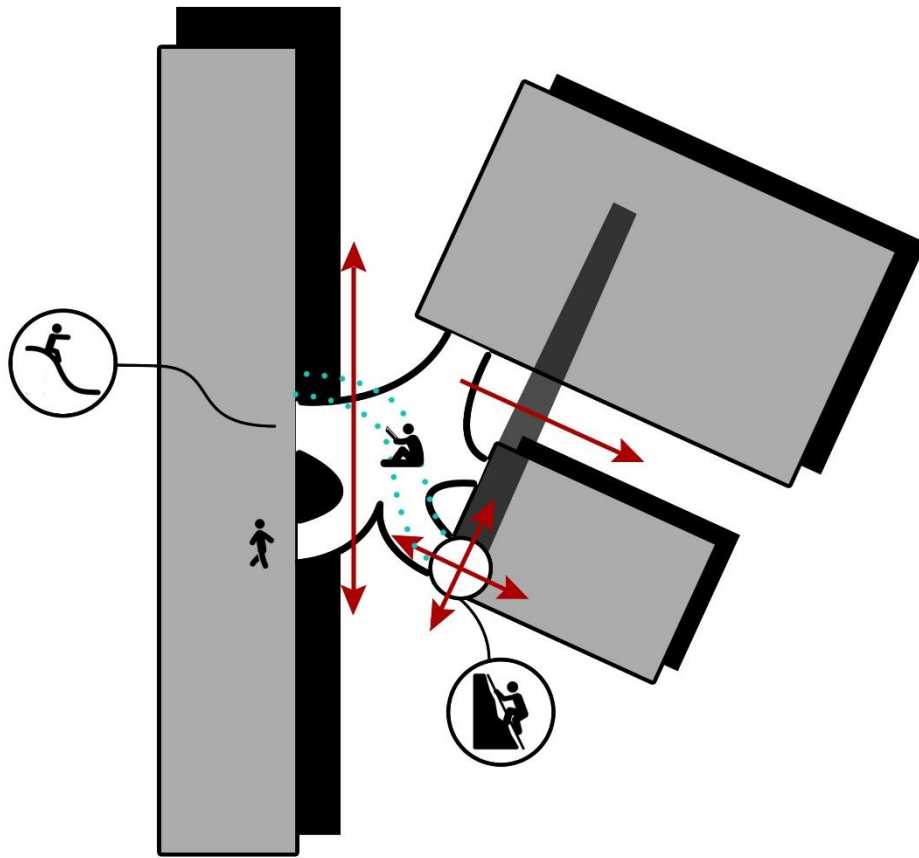
INITIAL SKETCH
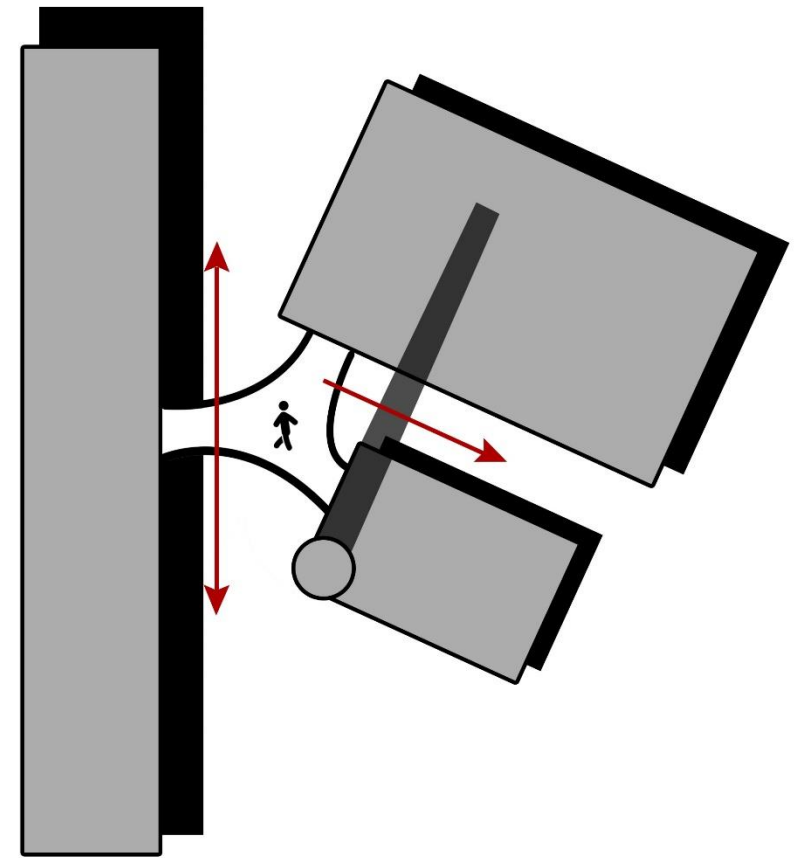
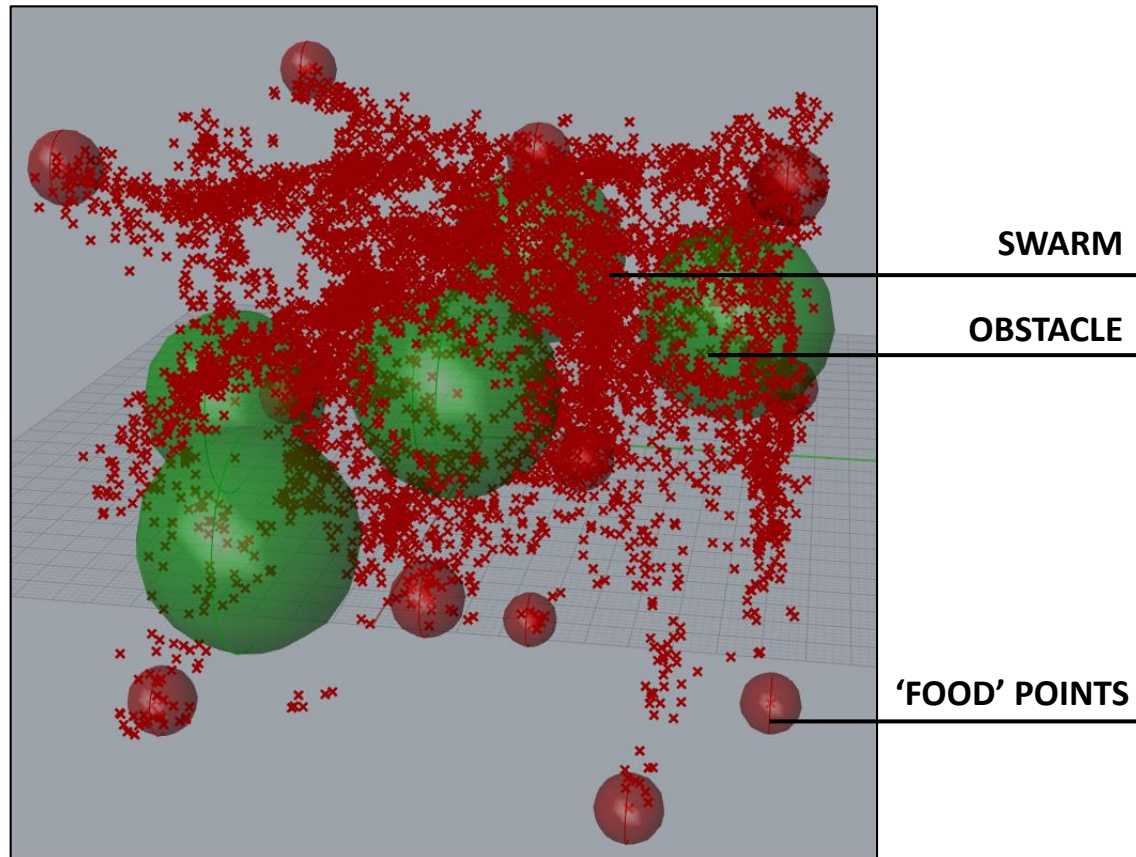REDUCED DESIGN

Macro scale – structural analysis
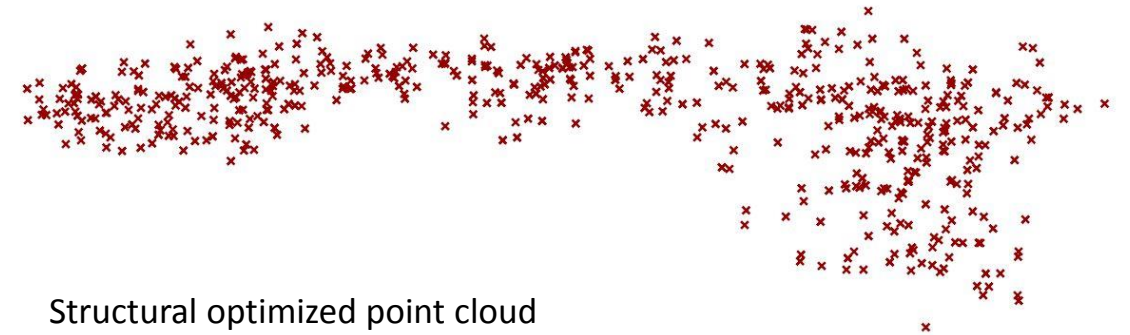
Generative Design by Structure:

Generating Design and patterns from topology optimization or structure manipulation, implementing different types of demonstrations to the form or the boundary.
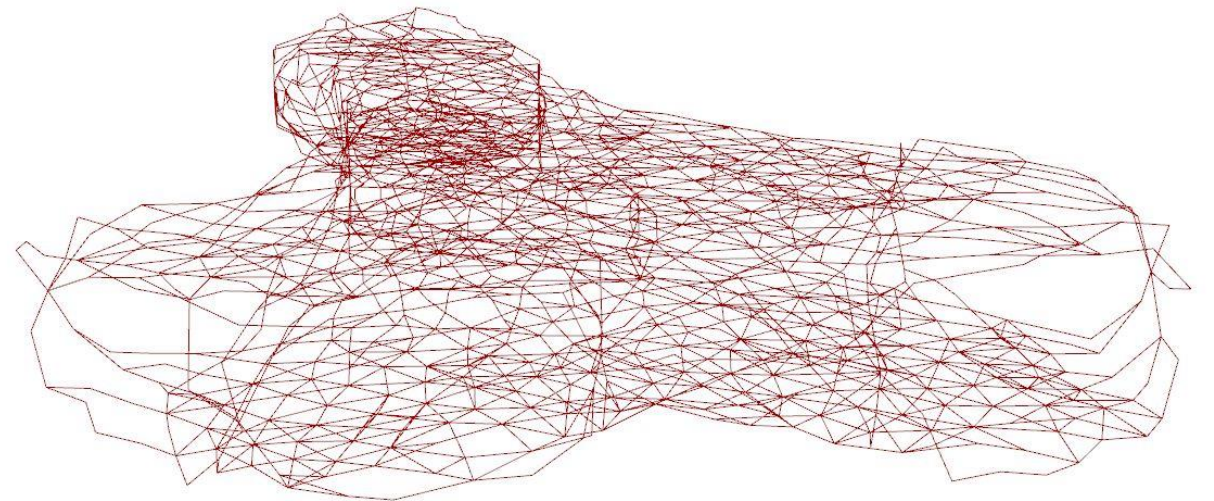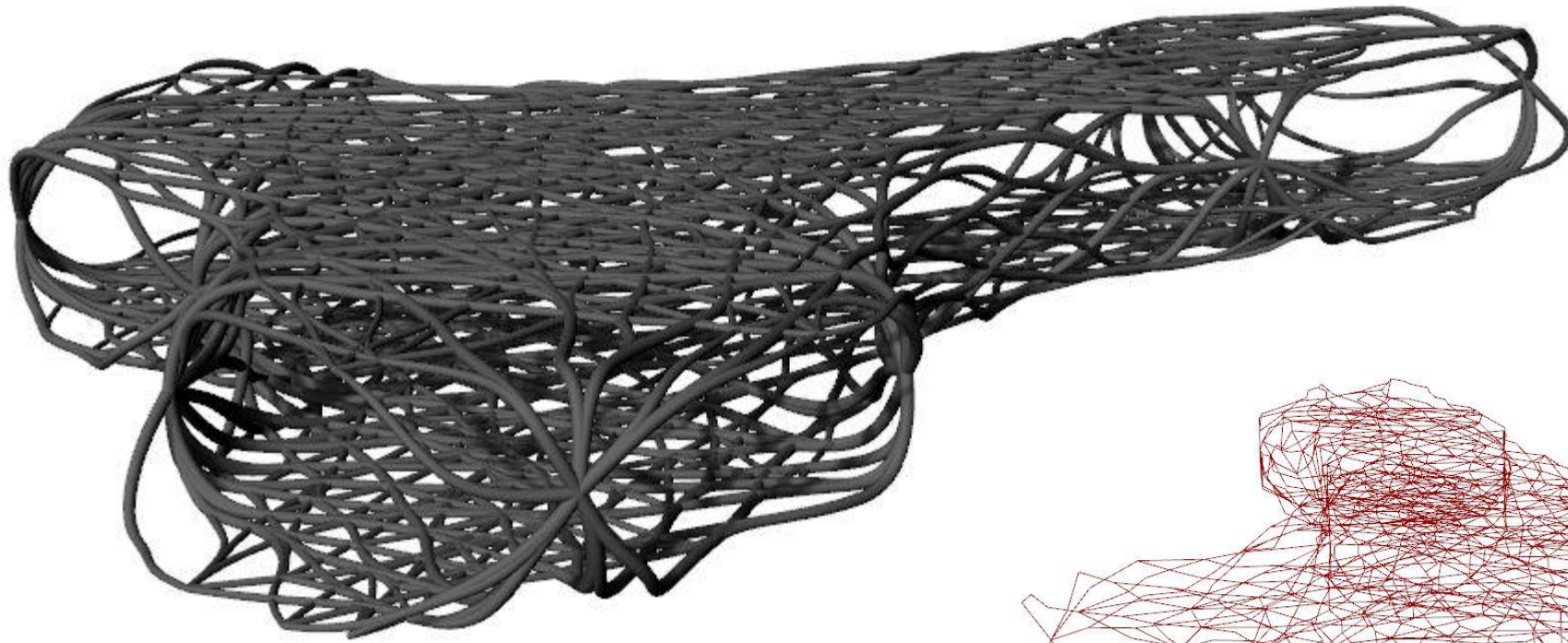
Macro scale – swarm

SWARM

OBSTACLE

'FOOD' POINTS

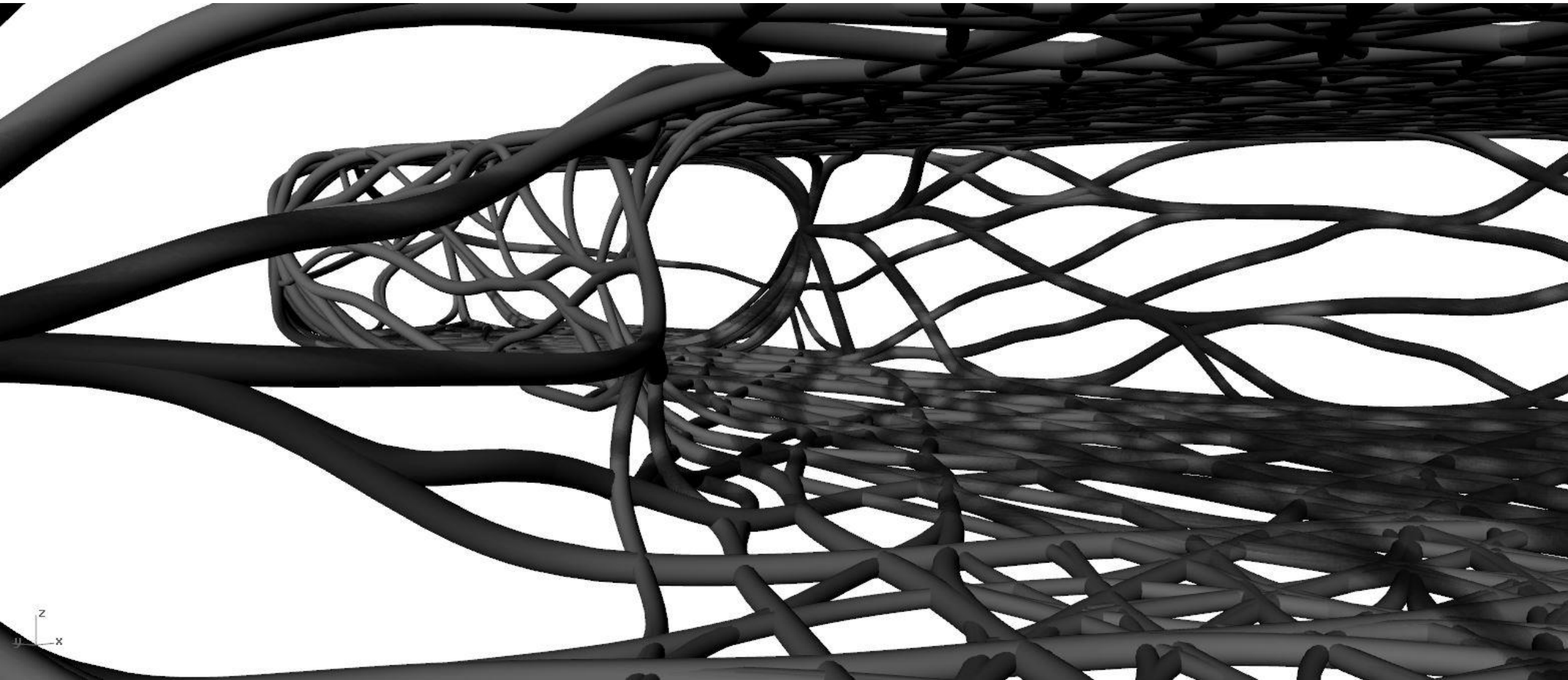Structural optimized point cloud

Plug-in: Physarealm

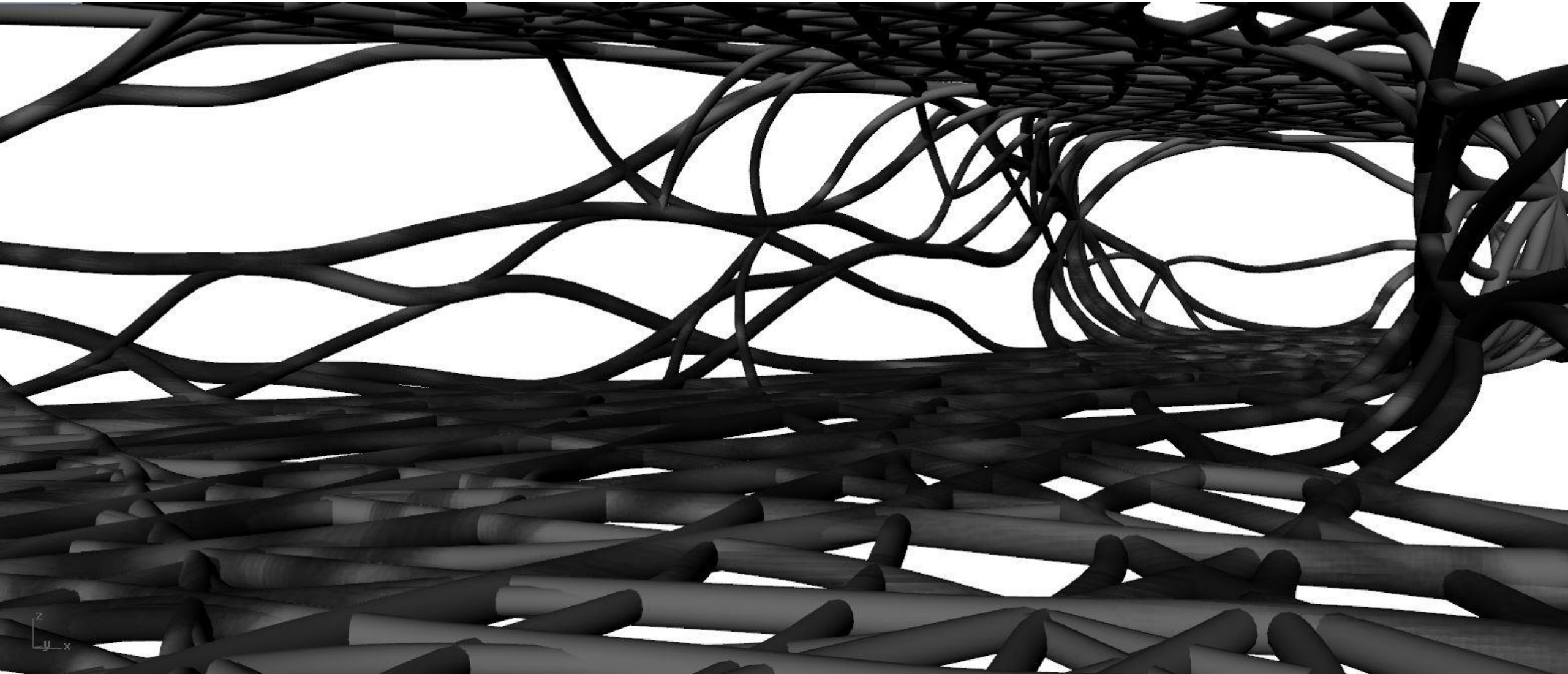Growth algorithm with Shortest Walk component

Macro scale – swarm
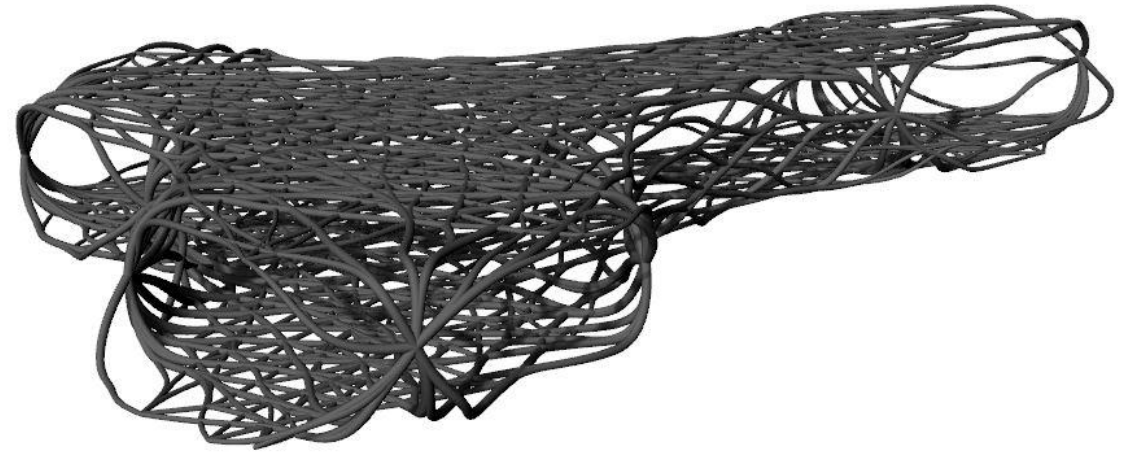
Macro scale – swarm

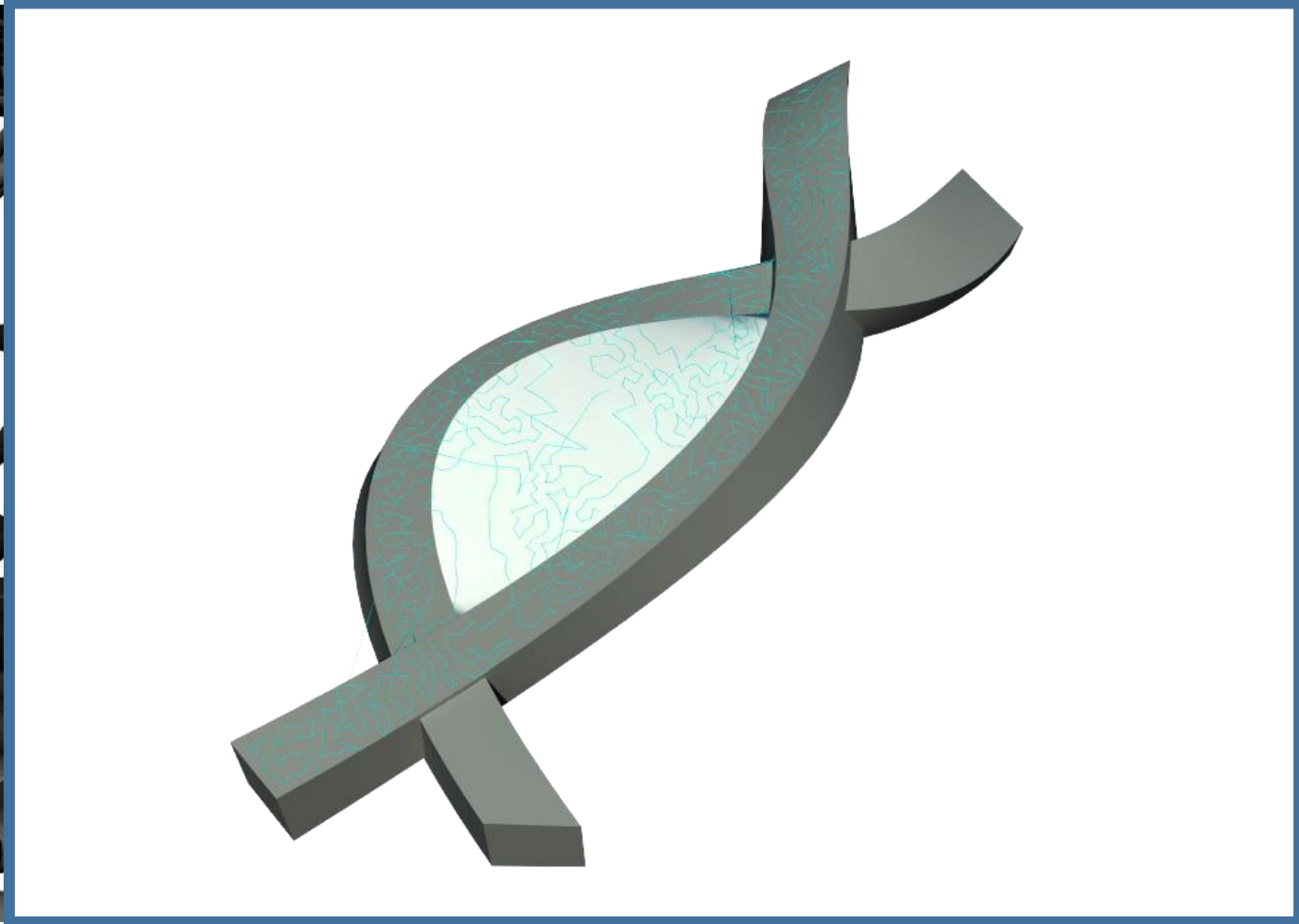# Macro scale – Swarm

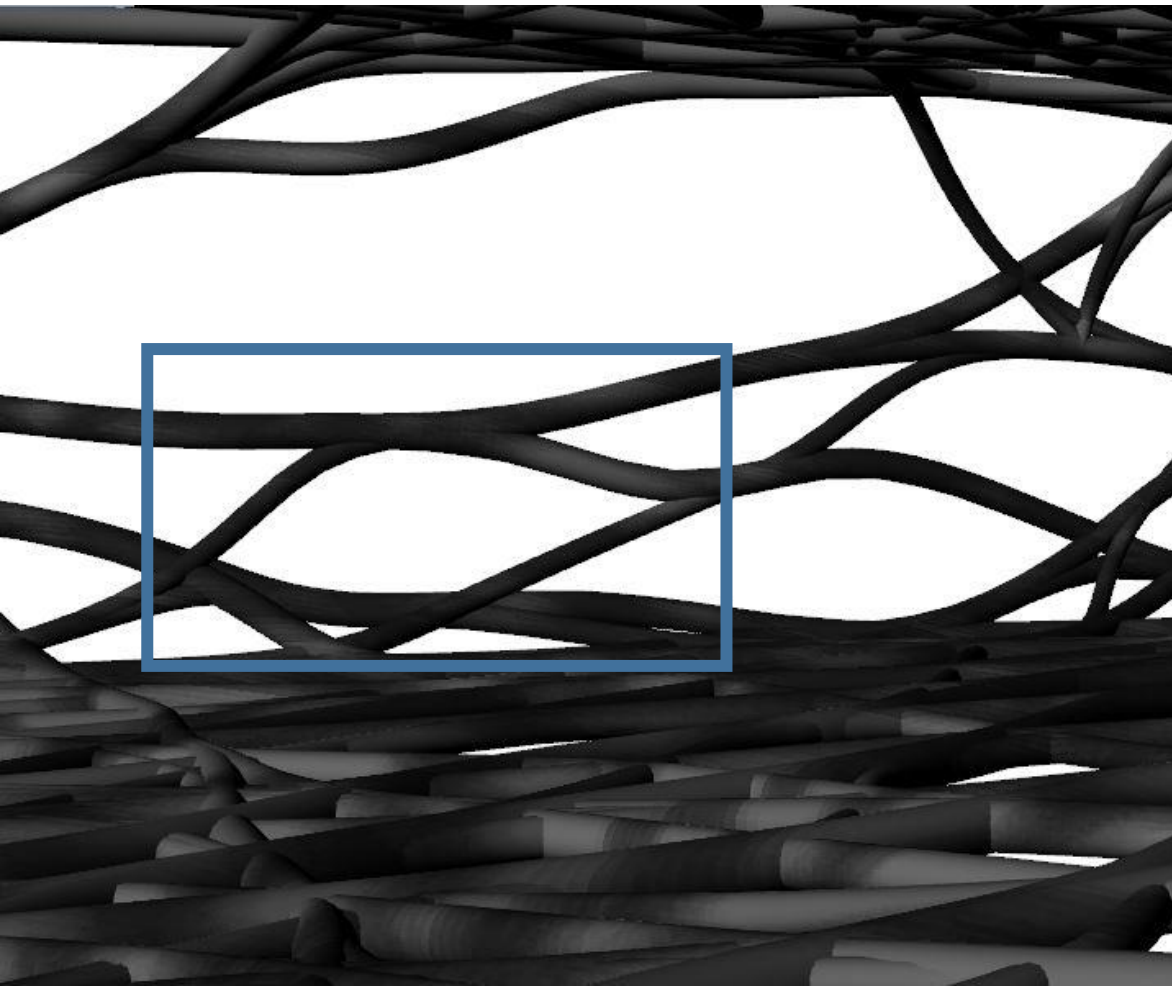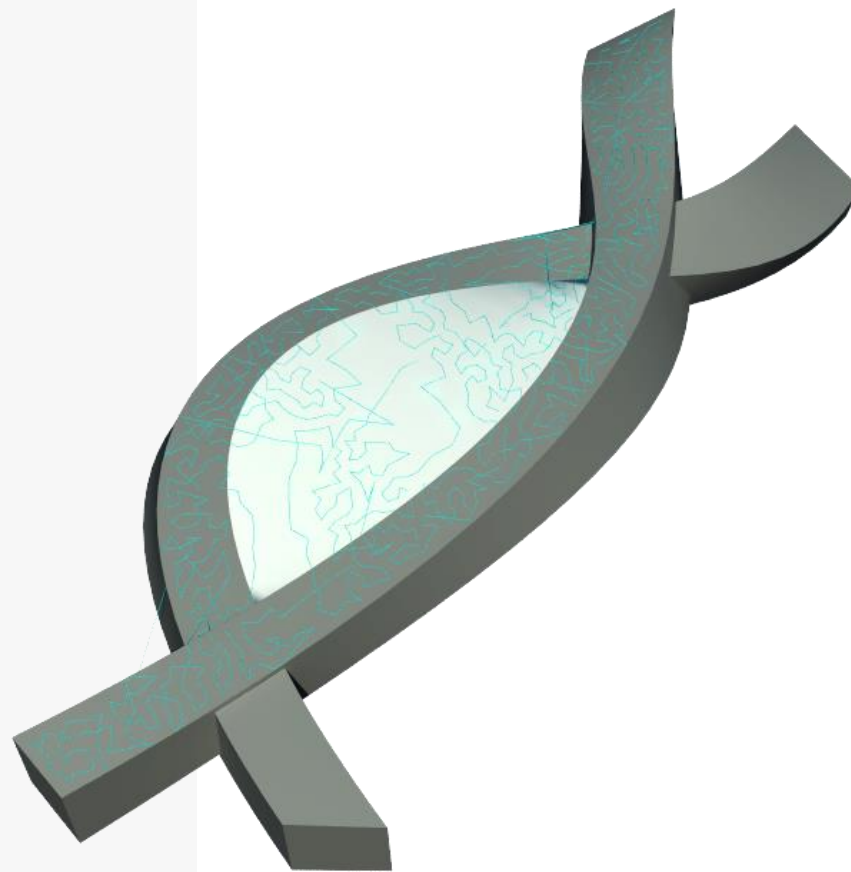# Macro scale

Performance <u>structurally</u>

Performances to address:
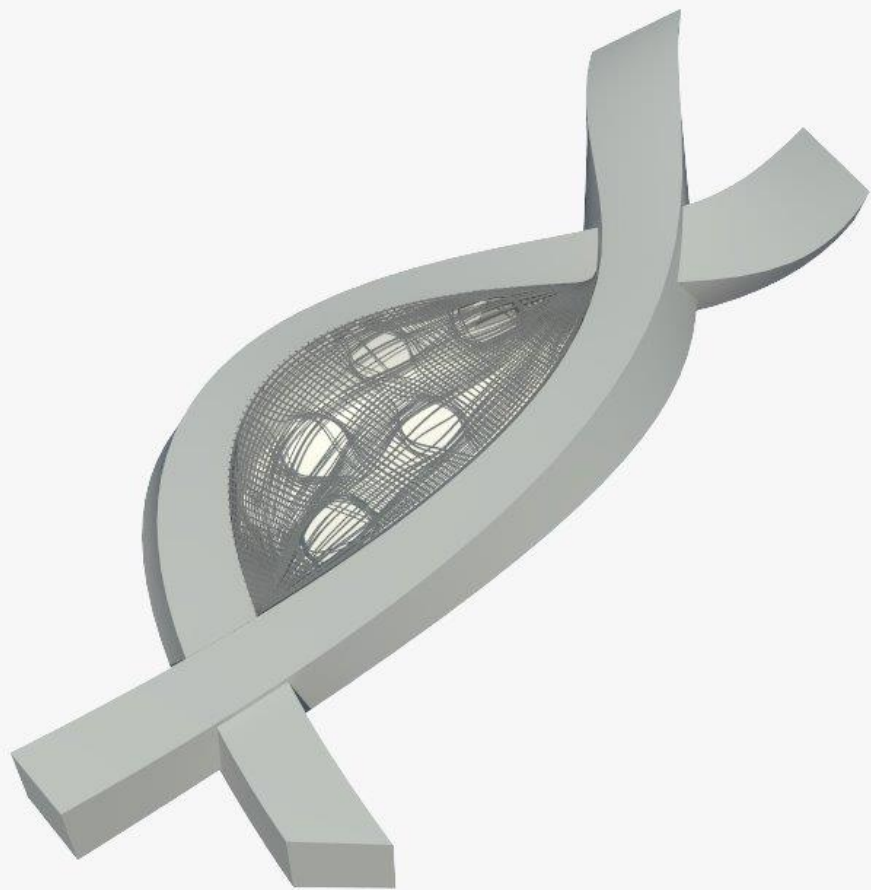
      - Functions

      - Light

      - View

      - Etc.

Meso scale – Fragment

# Meso scale – Fragment

Meso scale – Pattern

Travelling Salesman Problem (TSP): Given a set of cities and distance between every pair of cities, the problem is to find the shortest possible route that visits every city exactly once and returns to the starting point. ... The problem is a famous NP hard problem.

- Starting from city 1, the salesman must travel to all cities once before returning home

- The distance between each city is given, and is assumed to be the same in both directions

- Only the links shown are to be used

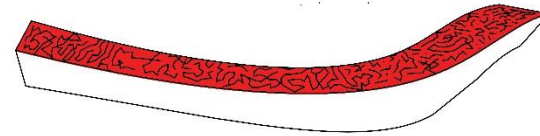- Objective - Minimize the total distance to be travelled
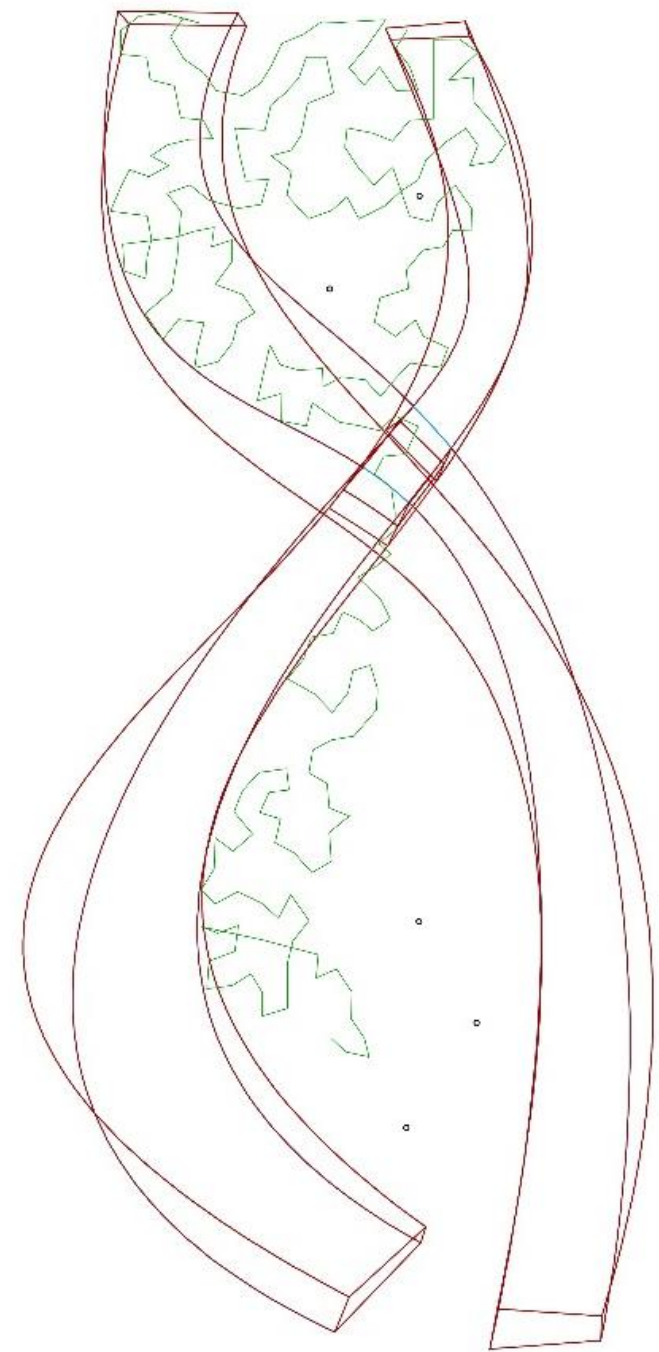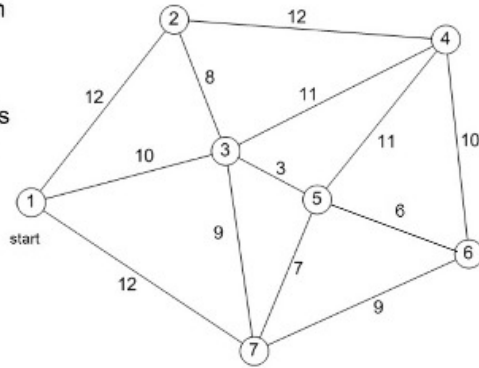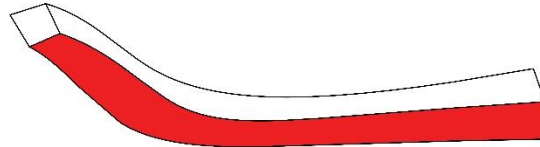
Meso scale – Production Beam 1
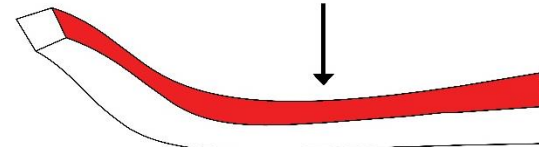
1. Fine wire cutting TOP part
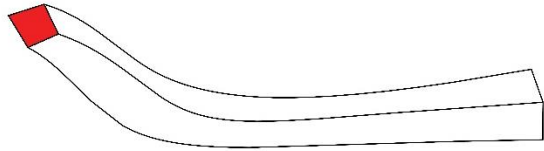
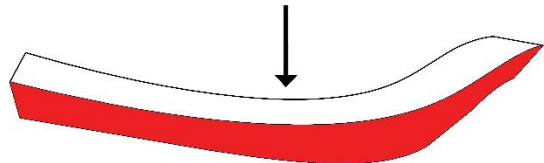2. Fine wire cutting FRONT part + milling pattern
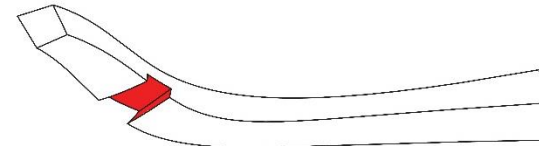
4. Fine wire cutting BACK part (180°)

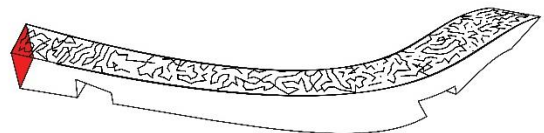3. Fine wire cutting RIGHT part (90°)

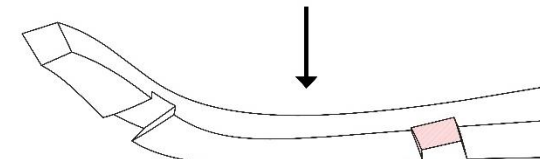5. Fine wire cutting LEFT part (-90°)

6. Fine wire cutting TOP JOINT
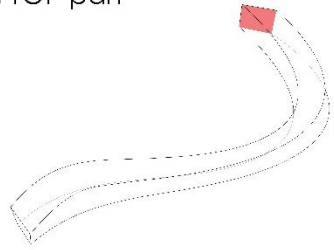
8. Fine wire cutting BOTTOM part
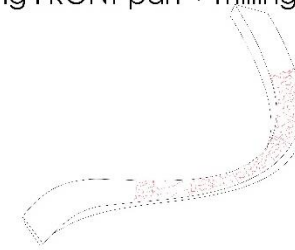
7. Fine wire cutting BOTTOM JOINT
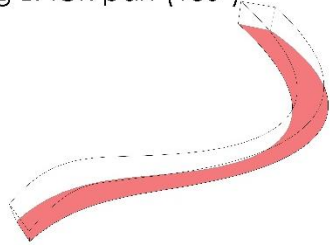
Meso scale – Production Beam 2
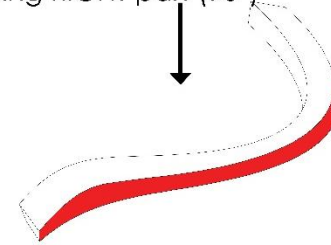
1. Fine wire cutting TOP part

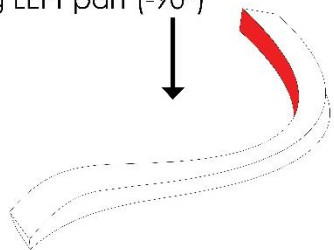2. Fine wire cutting FRONT part + milling pattern
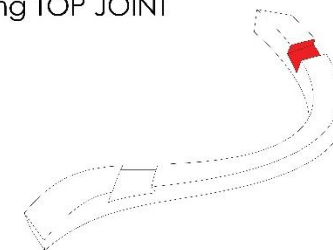
4. Fine wire cutting BACK part (180°)
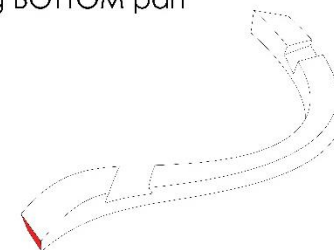
3. Fine wire cutting RIGHT part (90°)

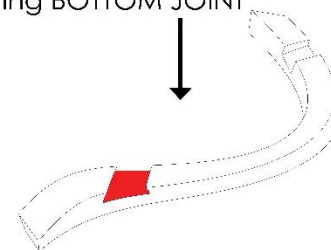5. Fine wire cutting LEFT part (-90°)

6. Fine wire cutting TOP JOINT
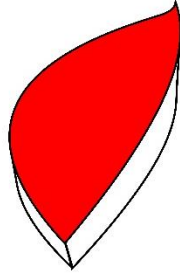
8. Fine wire cutting BOTTOM part
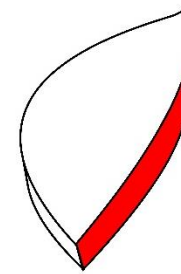
7. Fine wire cutting BOTTOM JOINT
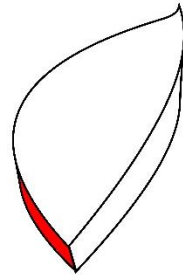
Meso scale – Central part
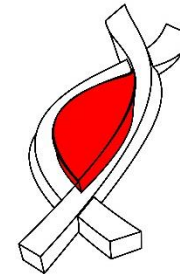
1. Fine wire cutting TOP part
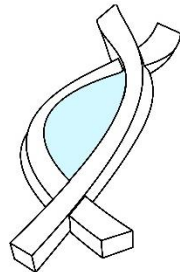
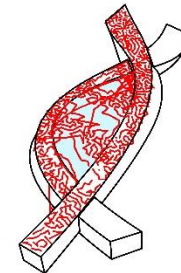2. Fine wire cutting RIGHT part

3. Fine wire cutting LEFT part

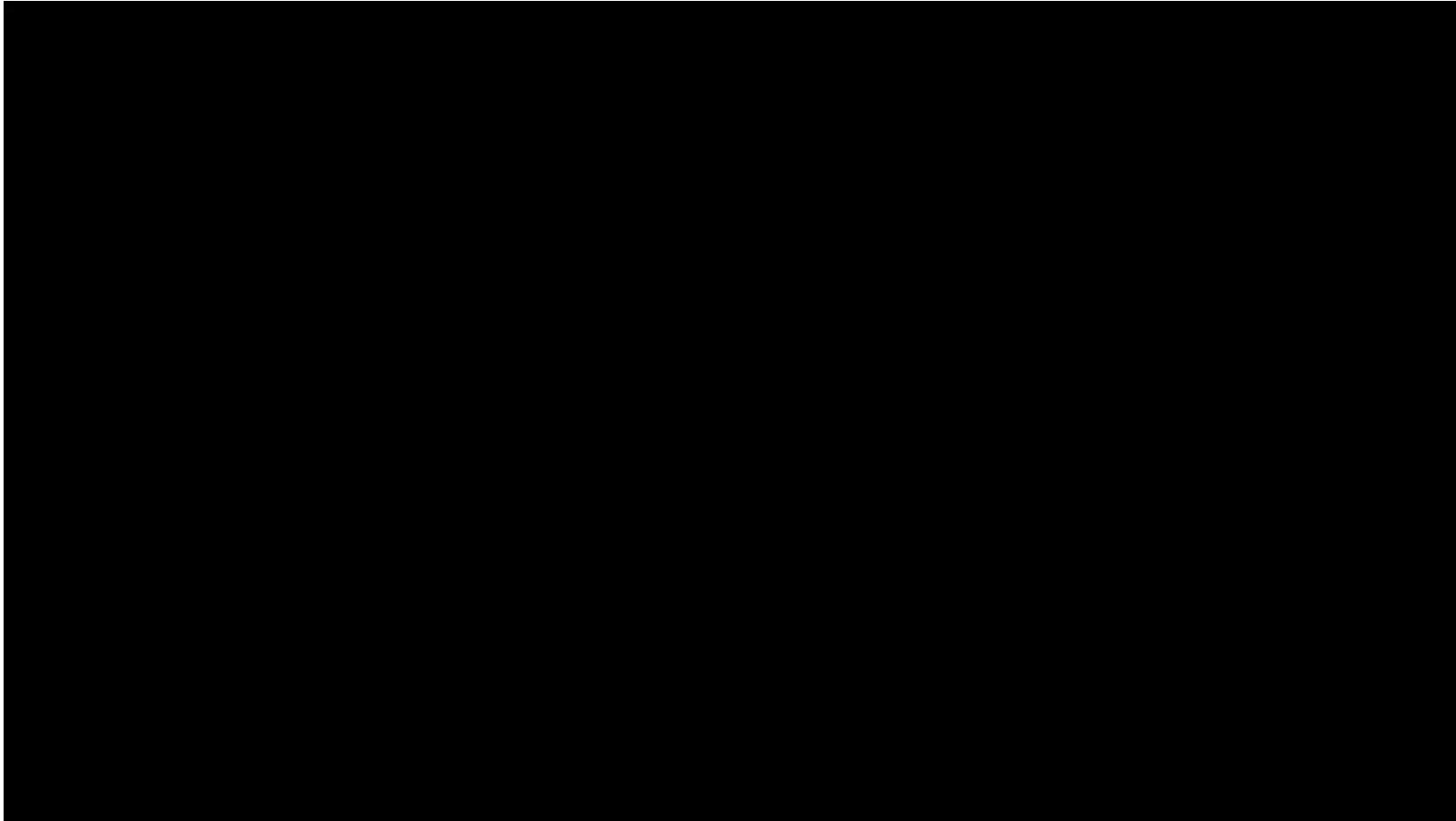4. Place it in the prototype

5. Place PVC foil

6. 3D print the silicon pattern

Meso scale – Structure

Meso scale – Pattern

Micro scale – Pattern fill in

Scenario future prototypes – TUD

Further development of:

- Parametric structure creation
- Patterns application to plastic surface

Scenario future prototypes – DIA

Further development of:

- Parametric structure creation
- Patterns application