100 Y3P

100Year Bauhaus Pavilion

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Brief

100 years Bauhaus pavilion

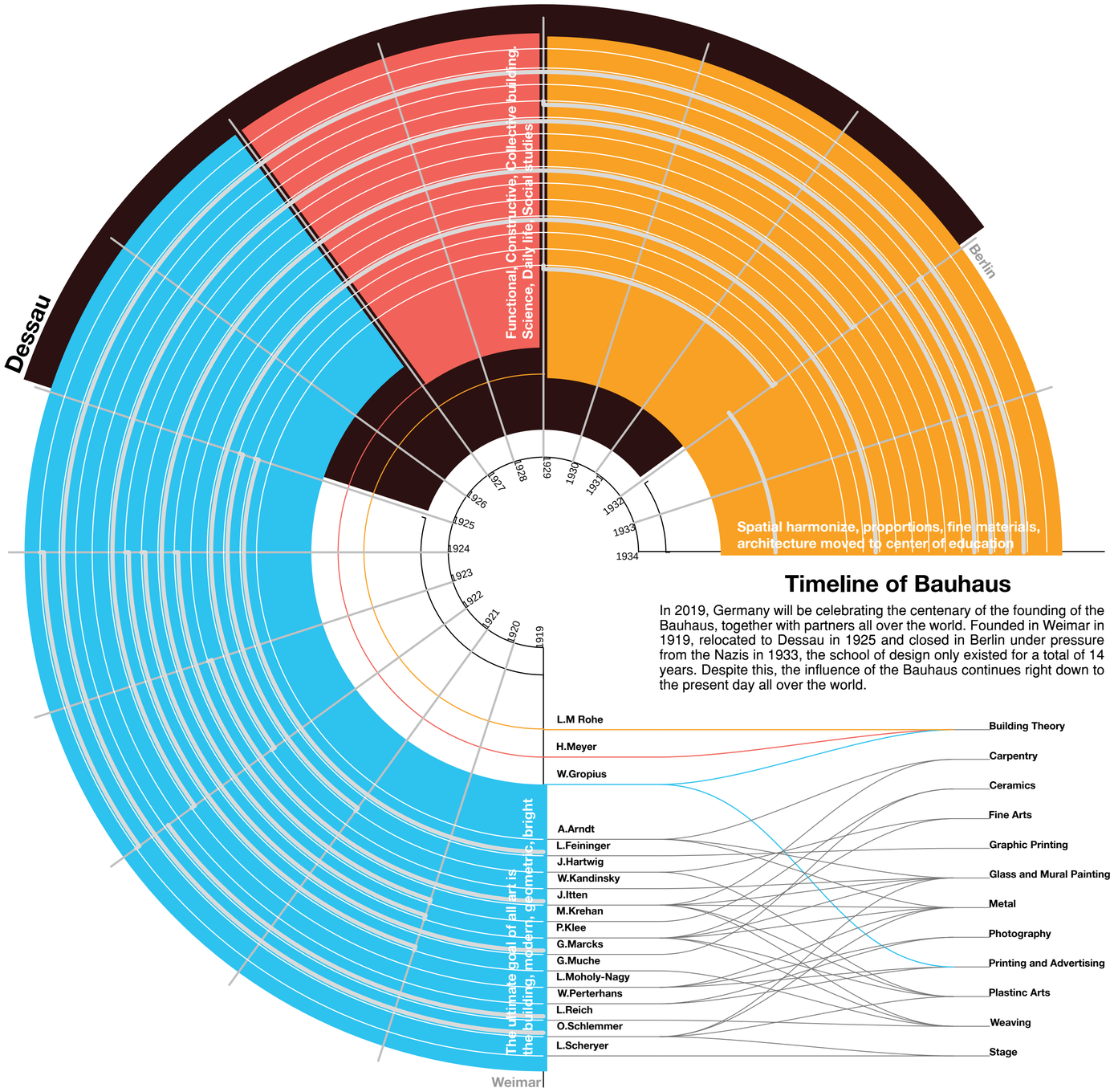
The 100 years Bauhaus celebration brings about the opportunity to reflect on the influence of new technologies in the 21st century in particular artificial intelligence, robotics, and 3D printing on architecture. The proposed robotically produced structure employs subtractive and additive 3D printing technologies. Furthermore, it embeds artificial intelligence at the level where sensor-actuators such as light dependent resistors, infrared distance sensors, pressure sensors, etc. informing LED lights, speakers, projectors, etc. in order to allow users to customize operation and use of the pavilion. These will allow adaptation of the built environment to variable environmental conditions and changing user needs.

History

Begining of the Dessau Bauhaus

From the Bauhaus Manifesto by Walter Gropius, Bauhaus changed their curicullums several times. Those principles depended on the location of bauhaus, its masters, and the desire of society. They started with a respect on hand craft, but accepted machinery culture, from workshop, to collaboration with companies, they expanded the boundaries themselves.

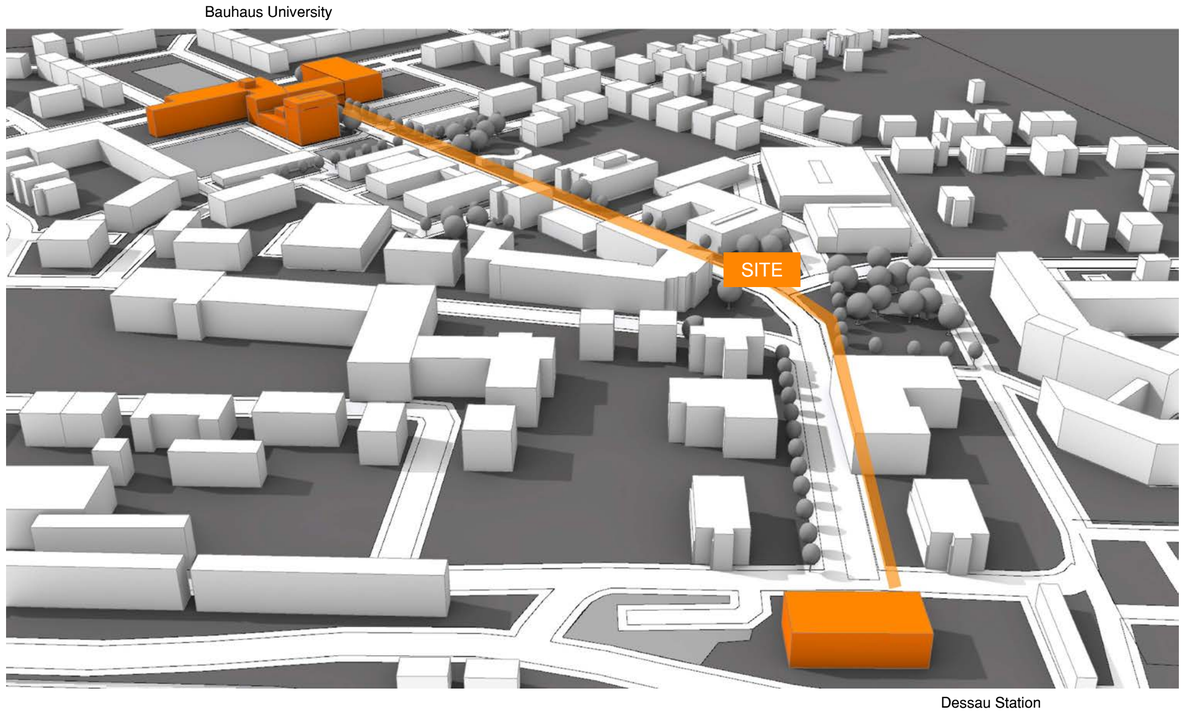
History

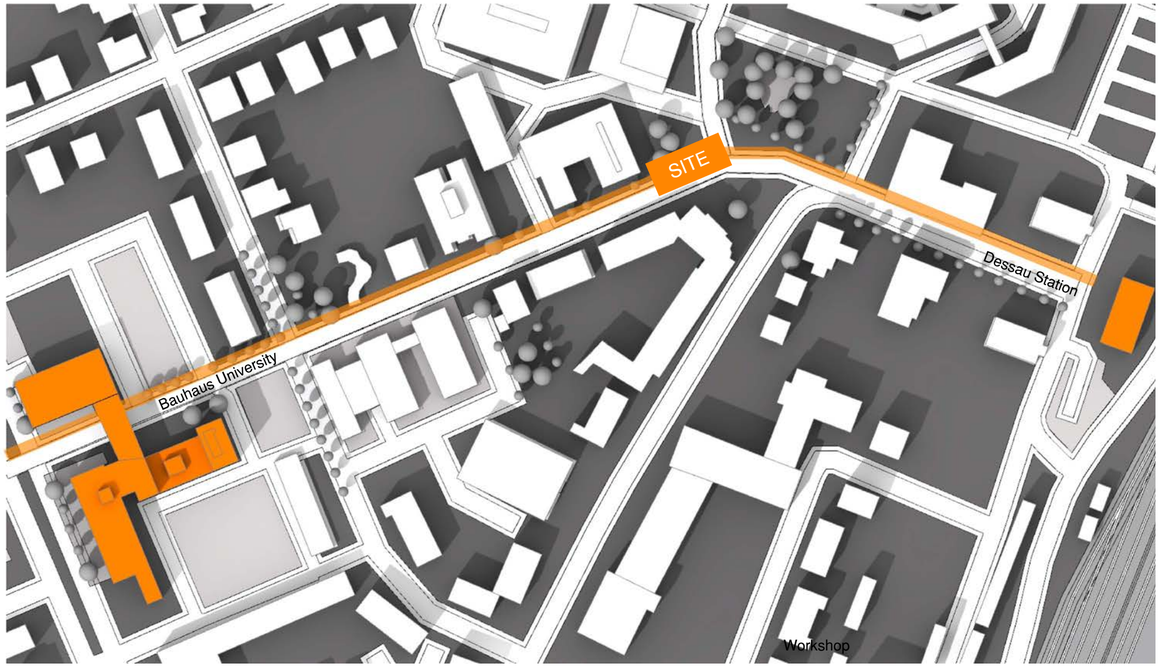


Timeline of Bauhaus

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.

Context

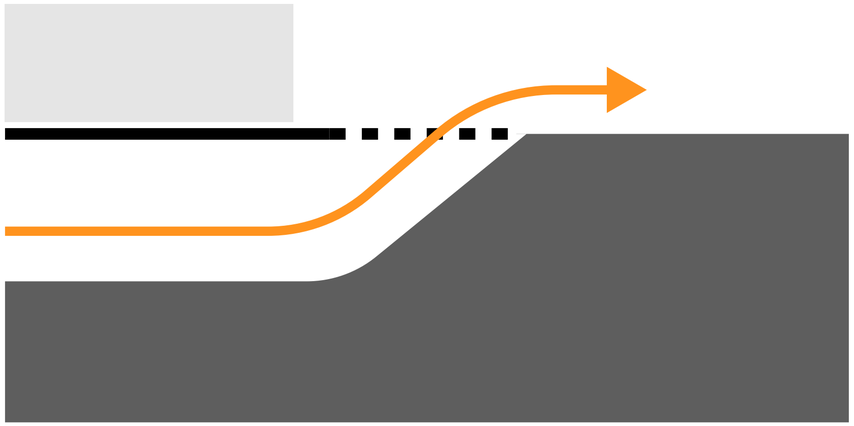




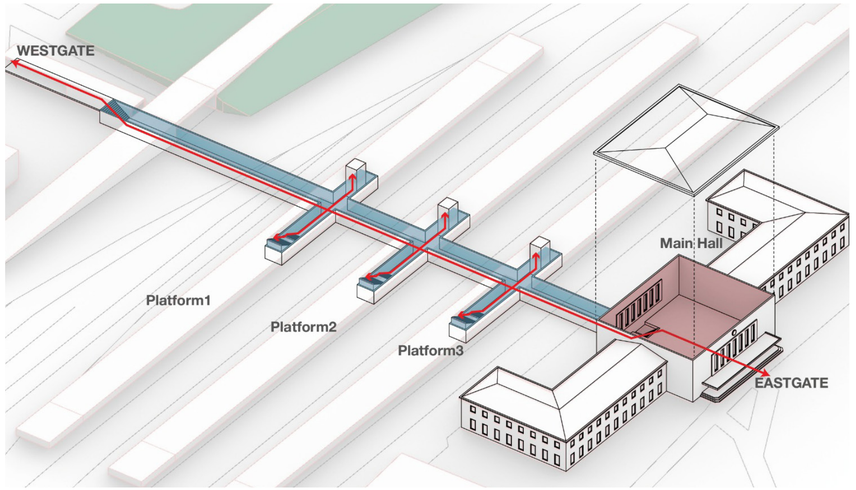
Location

Visitors arriving from Dessau station will directly see the pavilion at the end of their sightline. From which the pavilion is functioning as a point of recognition for the 100 year Bauhaus visitors, pointing them towards the location of the Bauhaus university building. By locating the pavilion on the junction of the axis between the Dessau station and the Bauhaus University building it is extending the relation between these two buildings.

Context



Section of tunnel exit

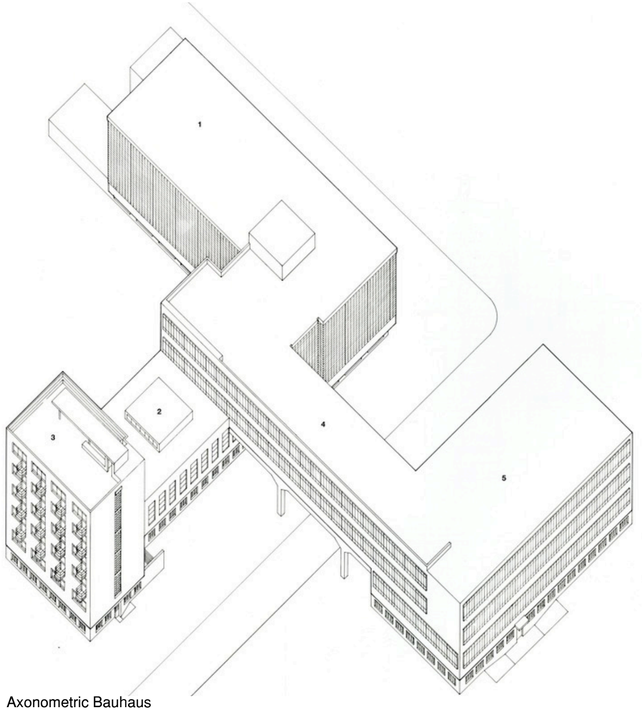


Dessau station

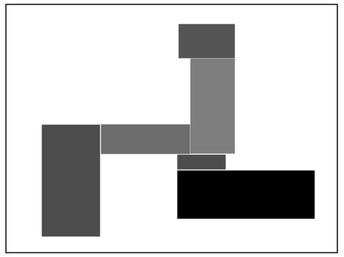
Dessau Station

Arriving at Dessau station the visitors will move from the trainplatform towards the westgate of the station. The first experience they will have is the moving through the underground tunnel and walking up the stairs towards street level. To then continue towards the 100 year bauhaus festival.

Context



Axonometric Bauhaus



Components

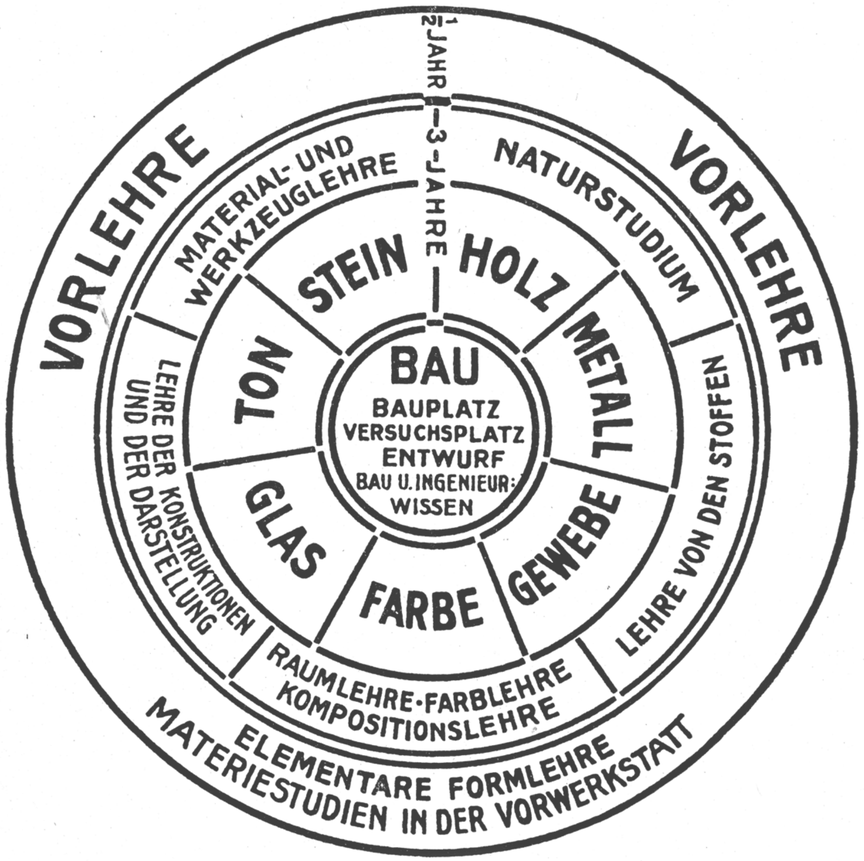
Height

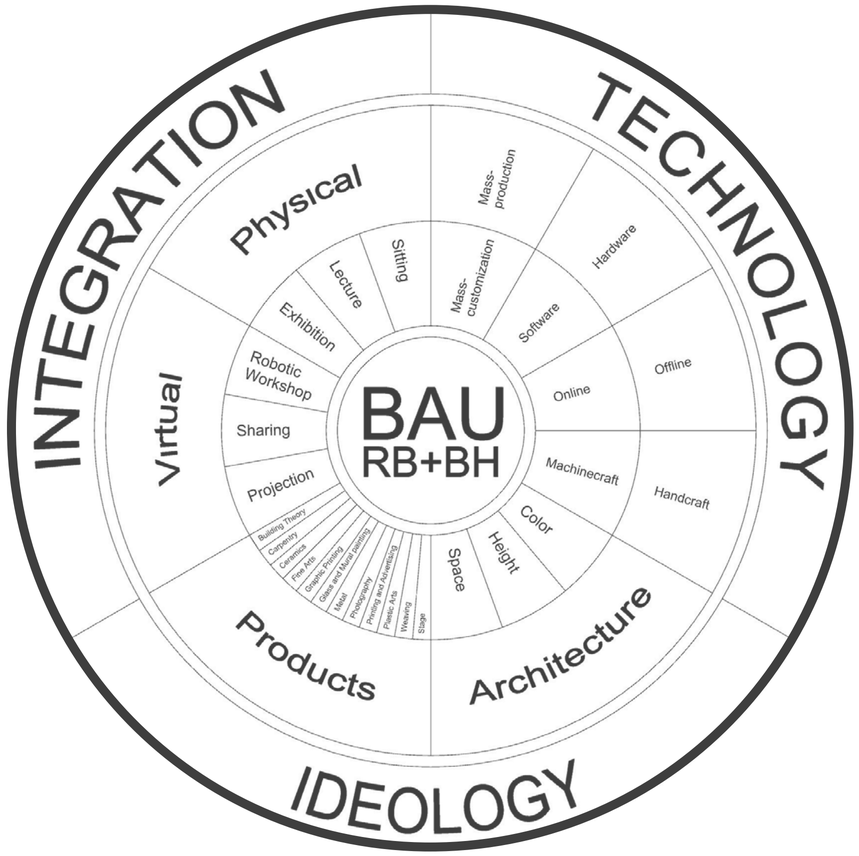
Material Hybridity

Bauhaus university building

The Bauhaus building designed by Walter Gropius in 1926, in which his views of architecture are manifested. The building is composed out of three wings all connected by a bridge. Each of these components houses different functions part of the Bauhaus education. Where they were all designed seperately. This composition of different components is emphasized in the different height of each of them. Showing the distinction between the functions throughout the building. The use of different materials arises from the fascination of Gropius in including structural and technological advancements within the design. Some of the various progressions include a window glazing, a skeleton of reinforced concrete and brickwork, mushroom-like ceilings of the lower level, and roofs covered with asphalt tiles that were meant to be walked on.

Concept

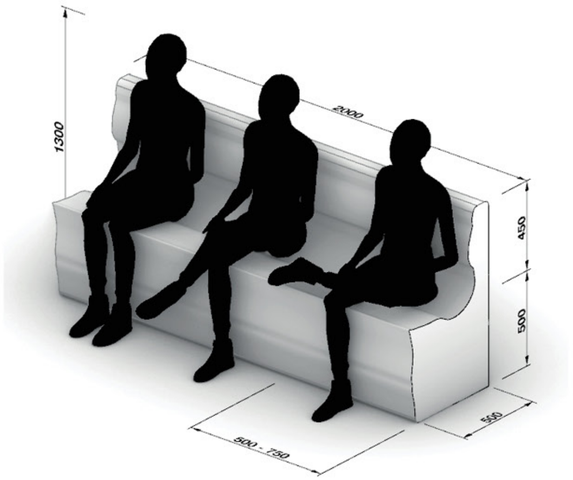




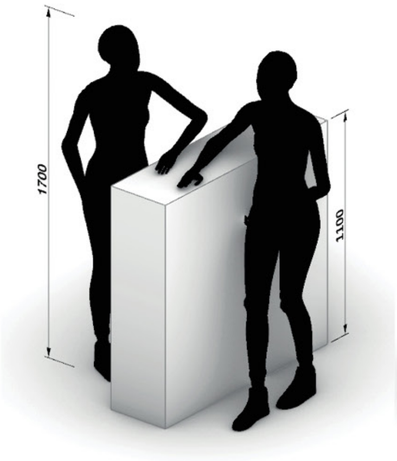
Inheritance of Ideology

By continuing ideology, the connection with art and craft, art and machine, art and architecture, this project will take a method, robotic building. The education principle of bauhaus will be expanded as bauhaus and robotic building aspects. The main attitude is that implementing this ideology as an architecture or building, not a just installation, or structural objects. It should contain activities, spaces, architectural components. By doing that, the 100 year Bauhaus pavilion will be a ‘place’ to experience of the part of the Bauhaus, in the city, Dessau.

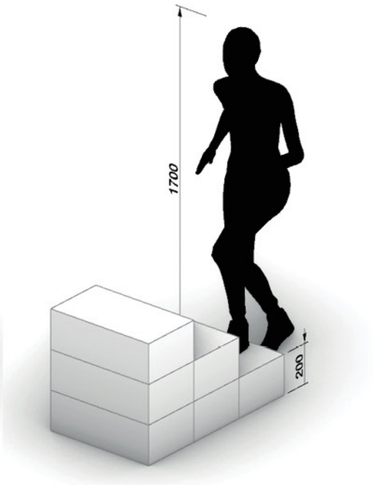
Activities



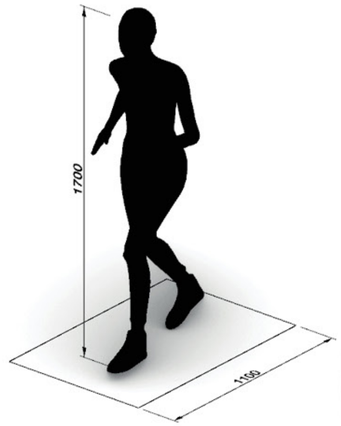
Bench



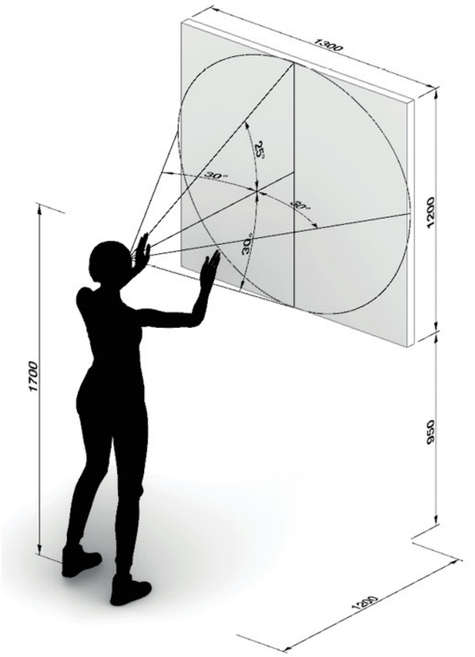
Bar



Observatory



Pedestrian Path

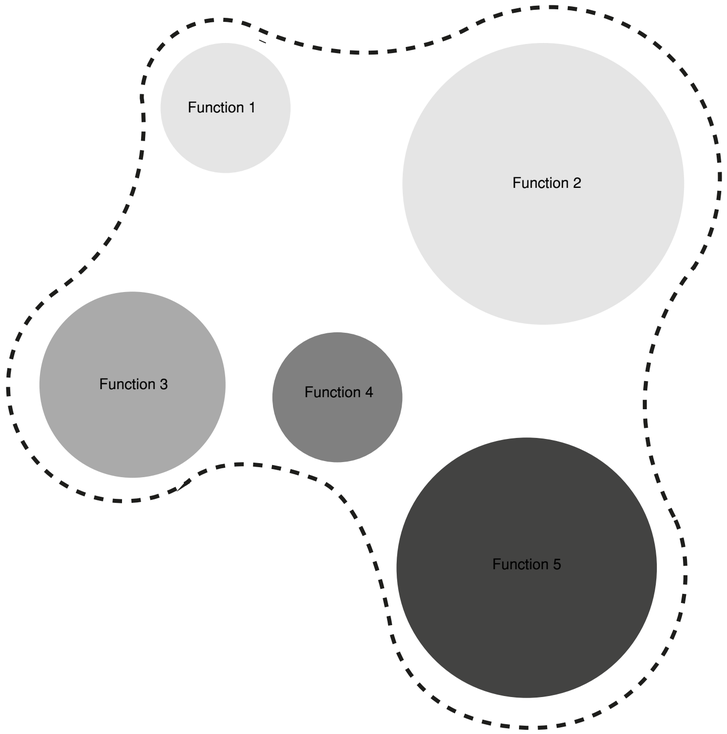


Workshop

Activities

The pavilion will house multiple functions. Visitors of the Bauhaus 100 year Festival will be able to sit down, walk through the pavilion, use the bar or walk up the stairs towards an observatory. Next to that lecturers or workshops can be given within the pavilion, using the stairs and benches as a tribune for the visitors.

Design Strategy



Functional Integration

Similar to the synthesis of components within the bauhaus building, the pavilion should house different functions. Becoming multi-functional and flexible in use.

Design Strategy

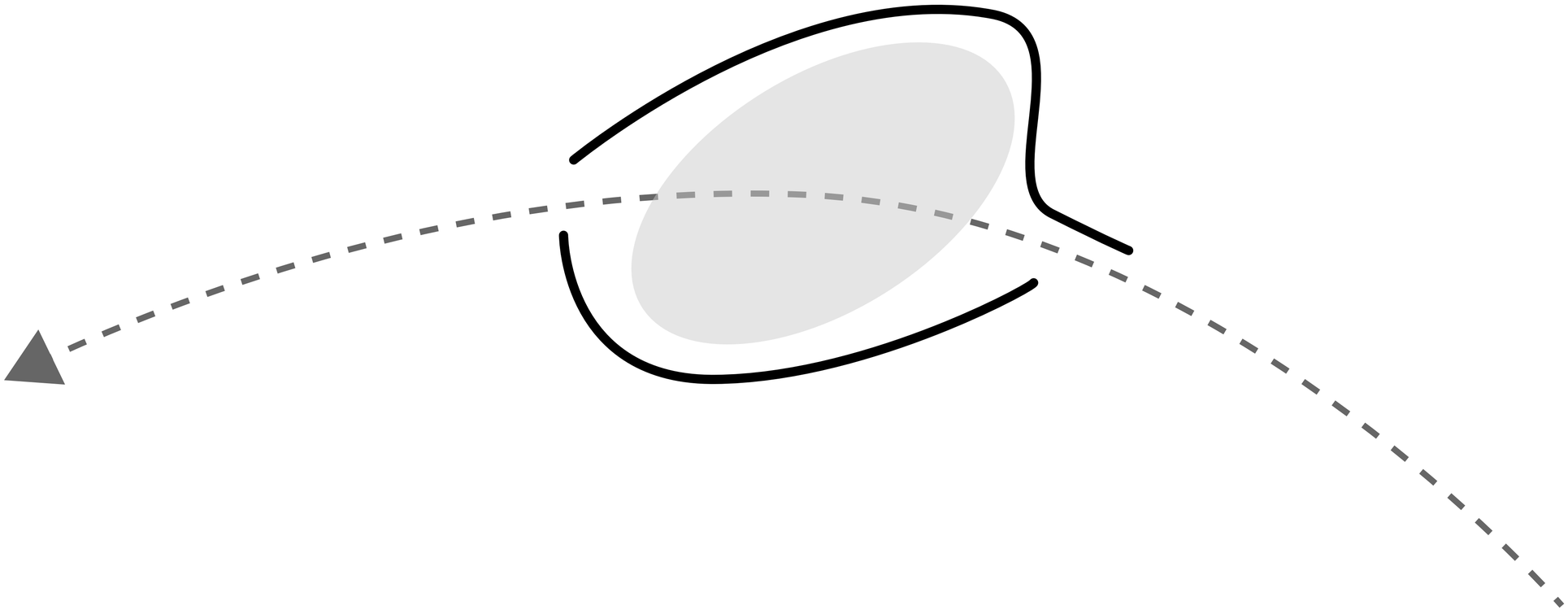
Mass-production

Mass-customization

Morphing Components

Following the contemporary technological and structural advancements, and the way they are to be expressed within architecture, the pavilion should communicate these contemporary qualities. Where the Bauhaus building is based on the concept of mass-production and industrialization, the pavilio will be based on mass-customization and robotics. 21st century technology giving more possibilities and freedom in the way that the buildings are shaped, no componential distinction but componential morphing.

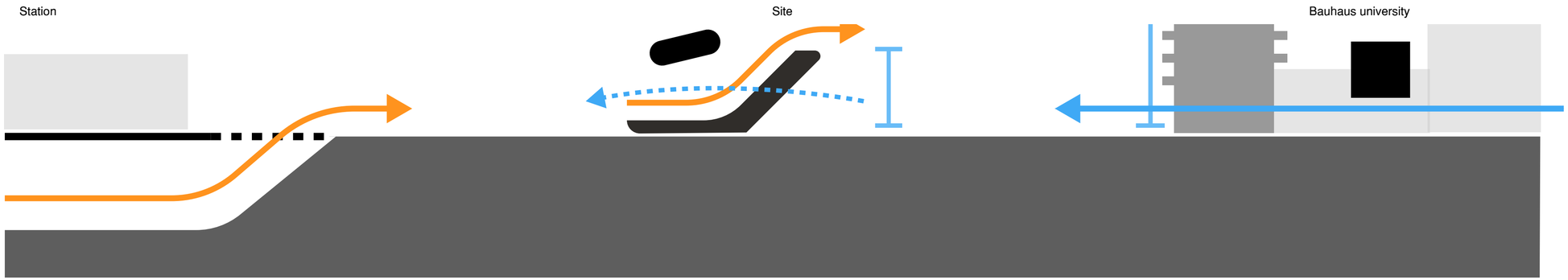
Design Strategy



Enclosing Space

Being situated on the axis between the station and the bauhaus buildings, the users will walk along the pavilion. The pavilion should invite the visitors to use the pavilion instead of simply walking by. Enclosing the axis and providing a space for the visitors to stay. Instead of a passage, it should become a space.

Design Strategy



Inheriting Profile

Placing the pavilion within its context. Instead of it being an artificial object, linking it to its surroundings with the focus on the spatial experiences of the Dessau station and the Bauhaus building.

- Ascending experience while viewing upon the Bauhaus, similar to that of the visitor exiting the station through the tunnel.
- Emphasizing of verticality similar to the student housing building of the bauhaus building
- Passing through the pavilion without entering, similar to the main passageway of the bauhaus building.
- Bridging the different functions together and roofing the passageway, similar to the bridge of the bauhaus building

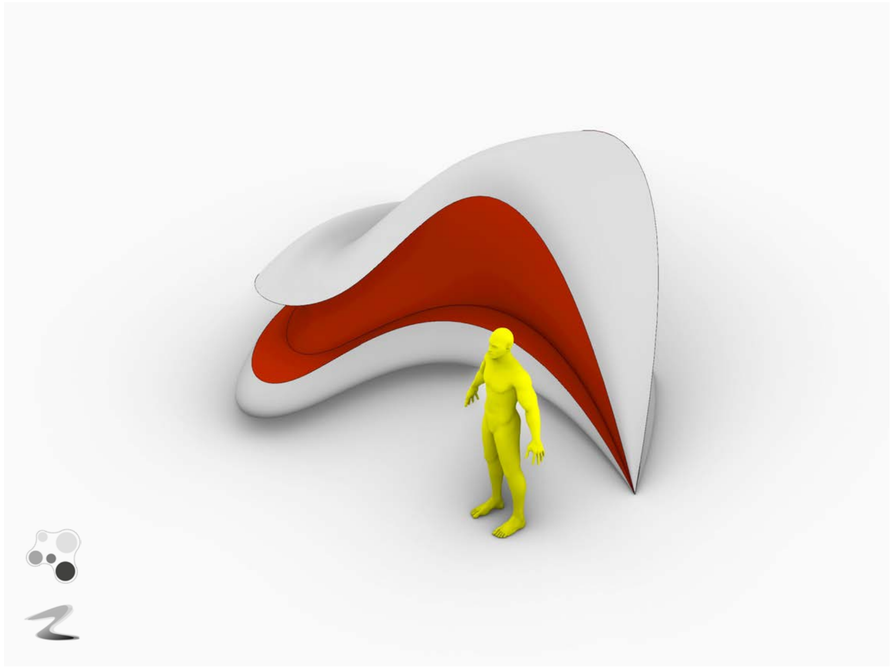
Design Experiments

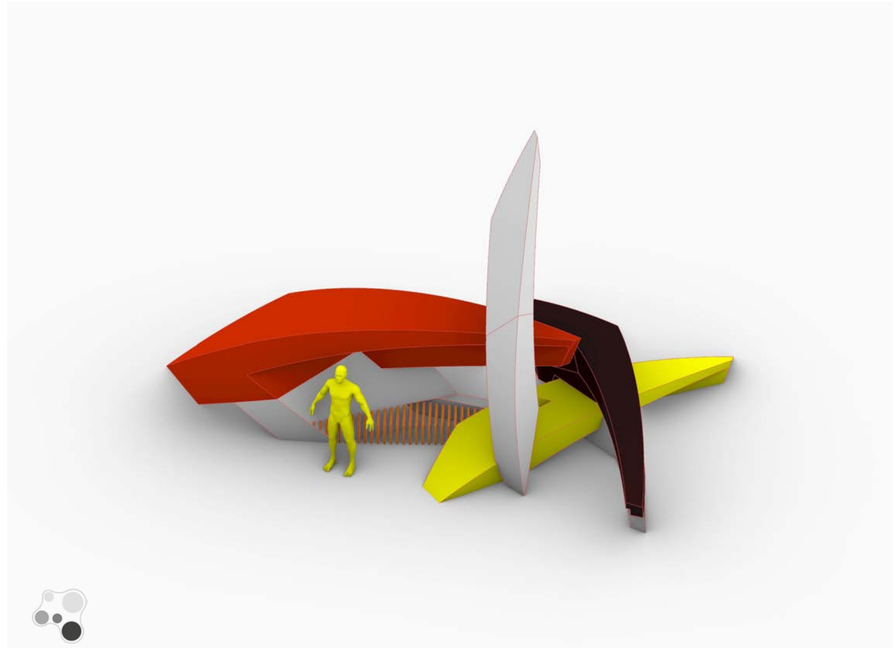
Functional Intergraion

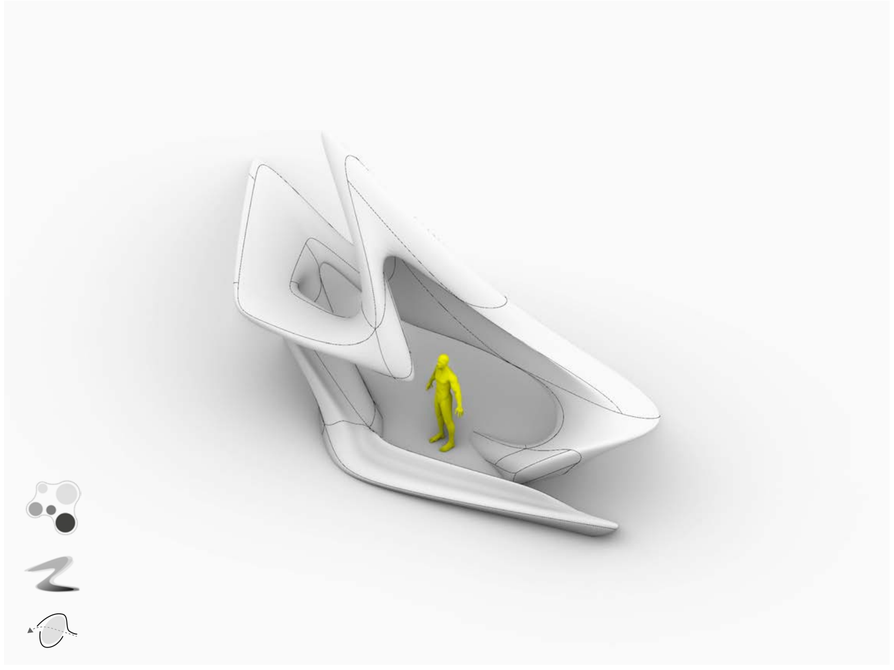
Morphing Components

Enclosing Space

Inheriting Profile







1st Generation

In order to implement the concept with design strategies, several design options were experimented. The first generation tested how to combine multiple functions with geometric laguaguages which came from robotic production methods. As the designs went on, double curved surfaces with subdivision modeling were included to implement the morphing of diverse architectural components with multiple functions as a ‘building.’

Design Experiments

Functional Intergraion

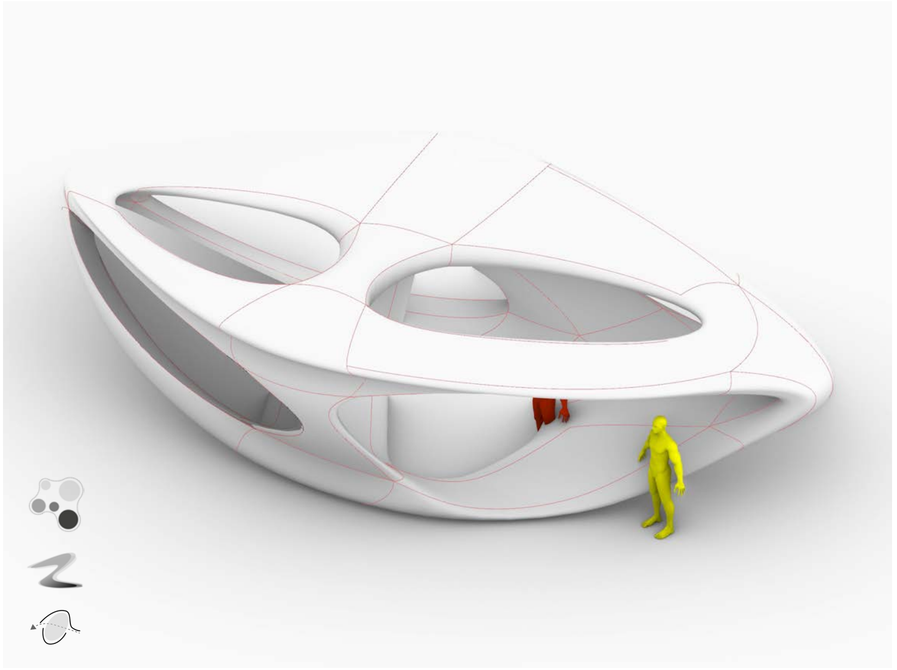
Morphing Components

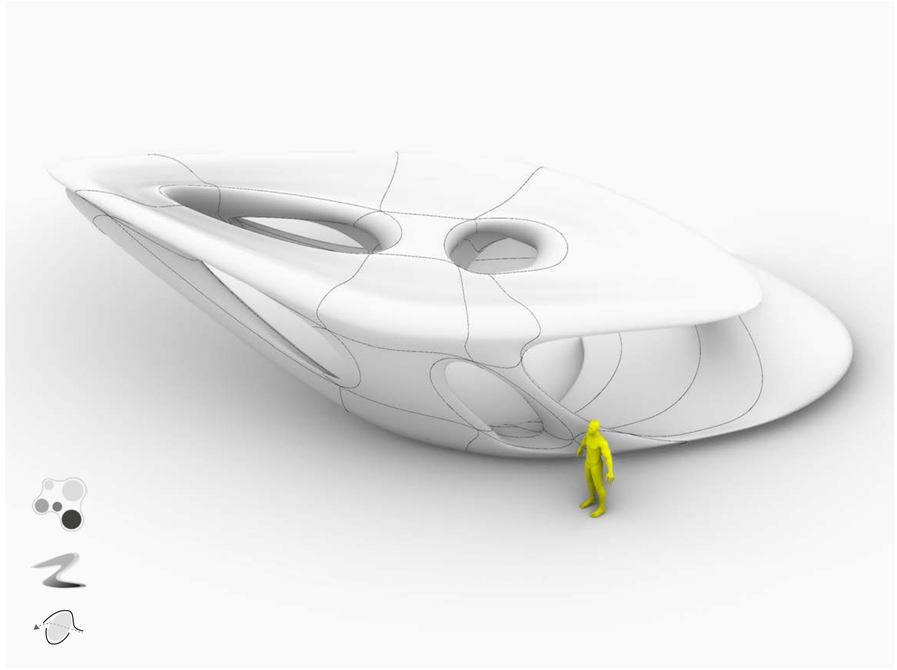
Enclosing Space

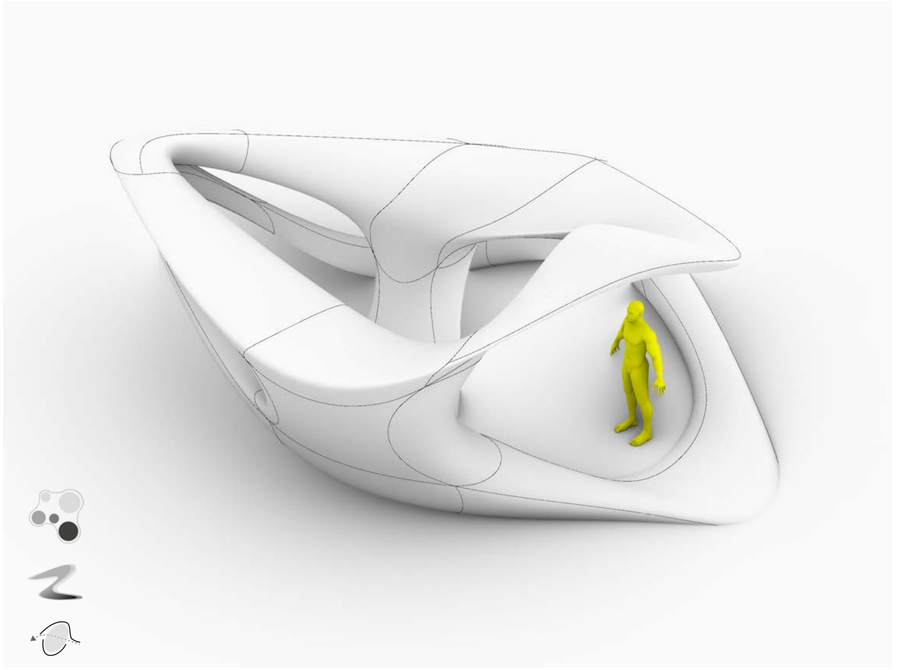
Inheriting Profile

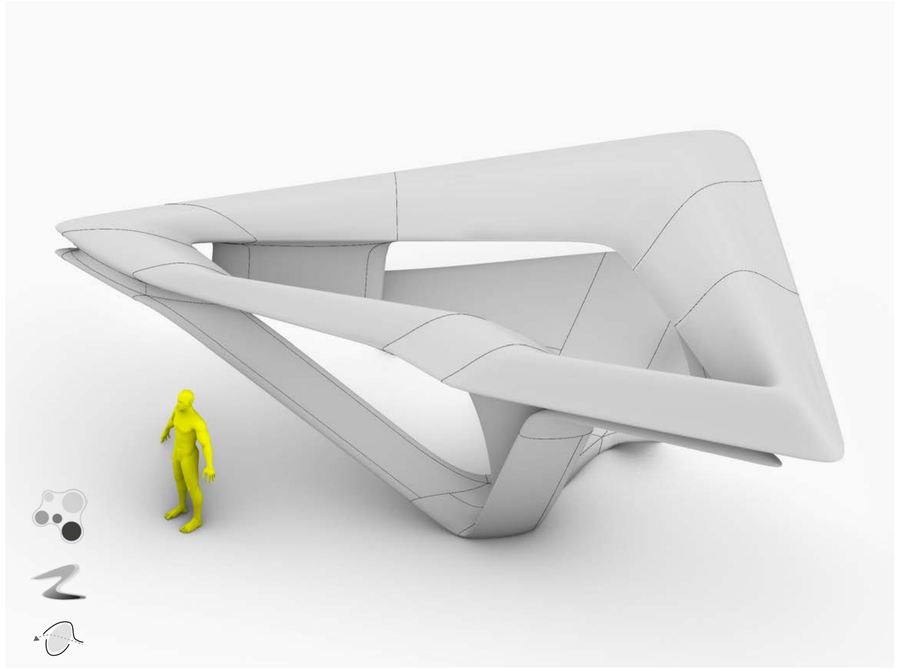
2nd Generation

The second generation considered to enclose the invisible path as a space. The enclosing included multiple functions with a double curved geometric language. By doing that whole architectural components can have a relationship between the urban context, the connection between the Bauhaus and Dessau station.

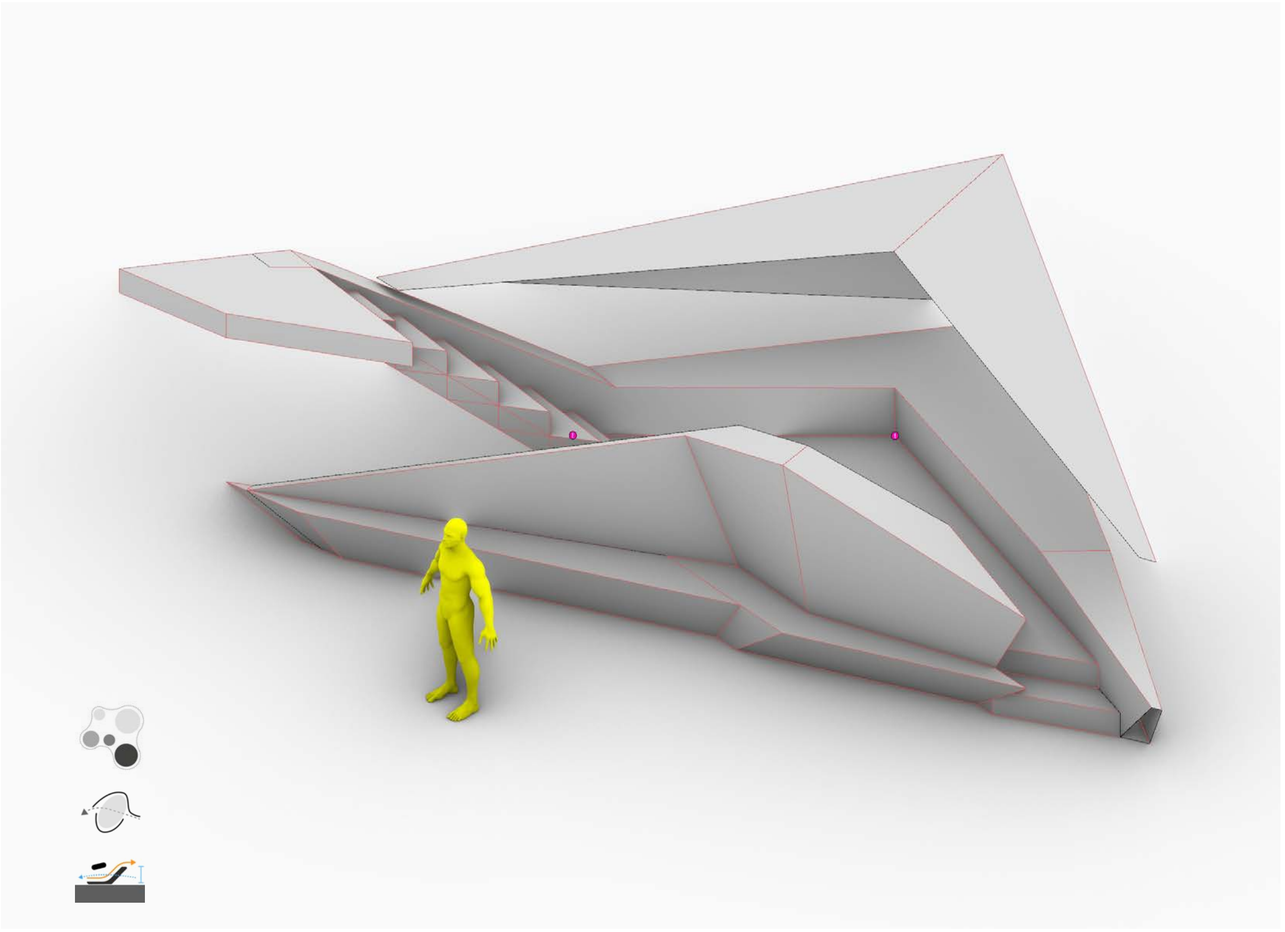


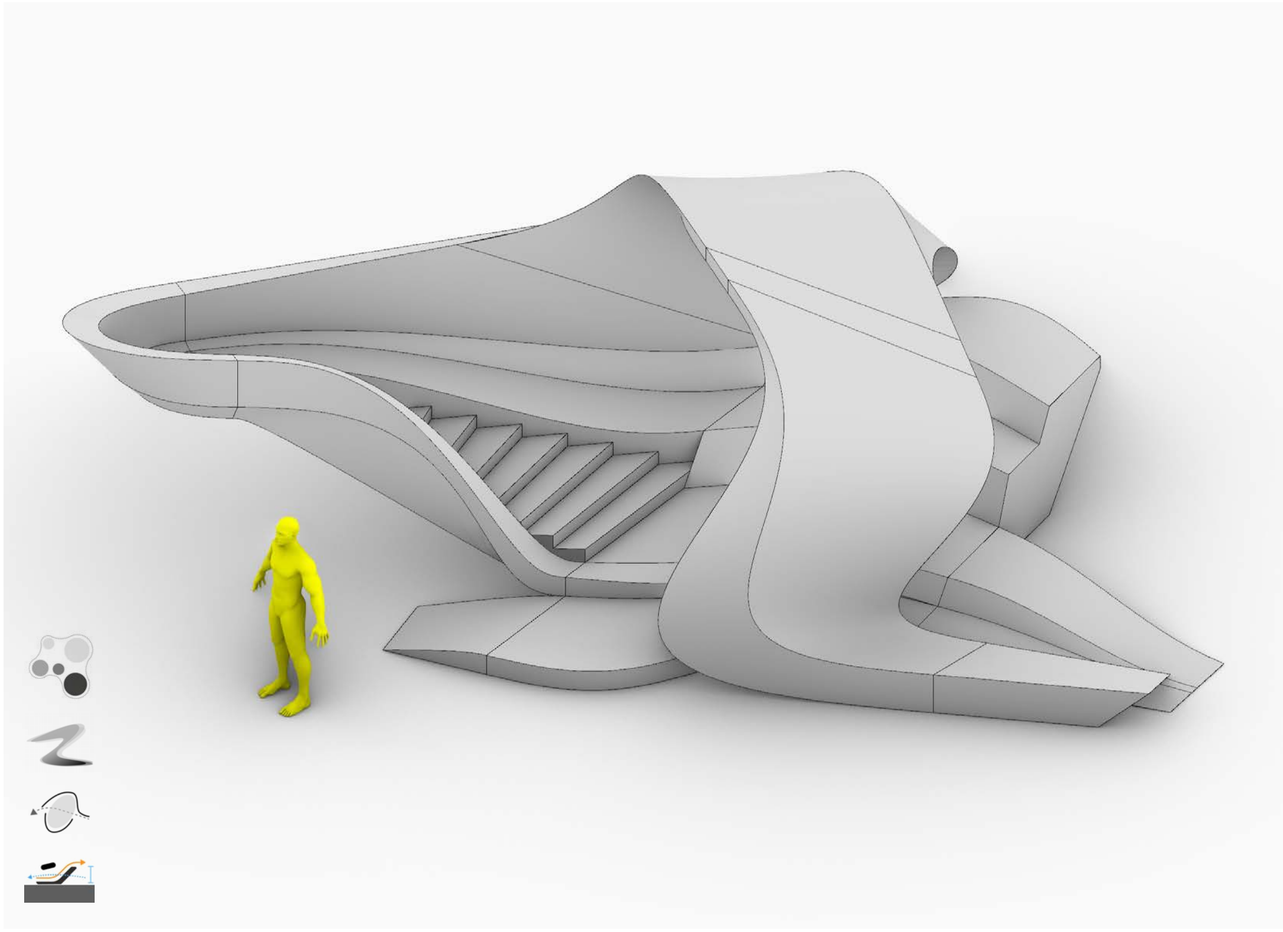






Design Experiments

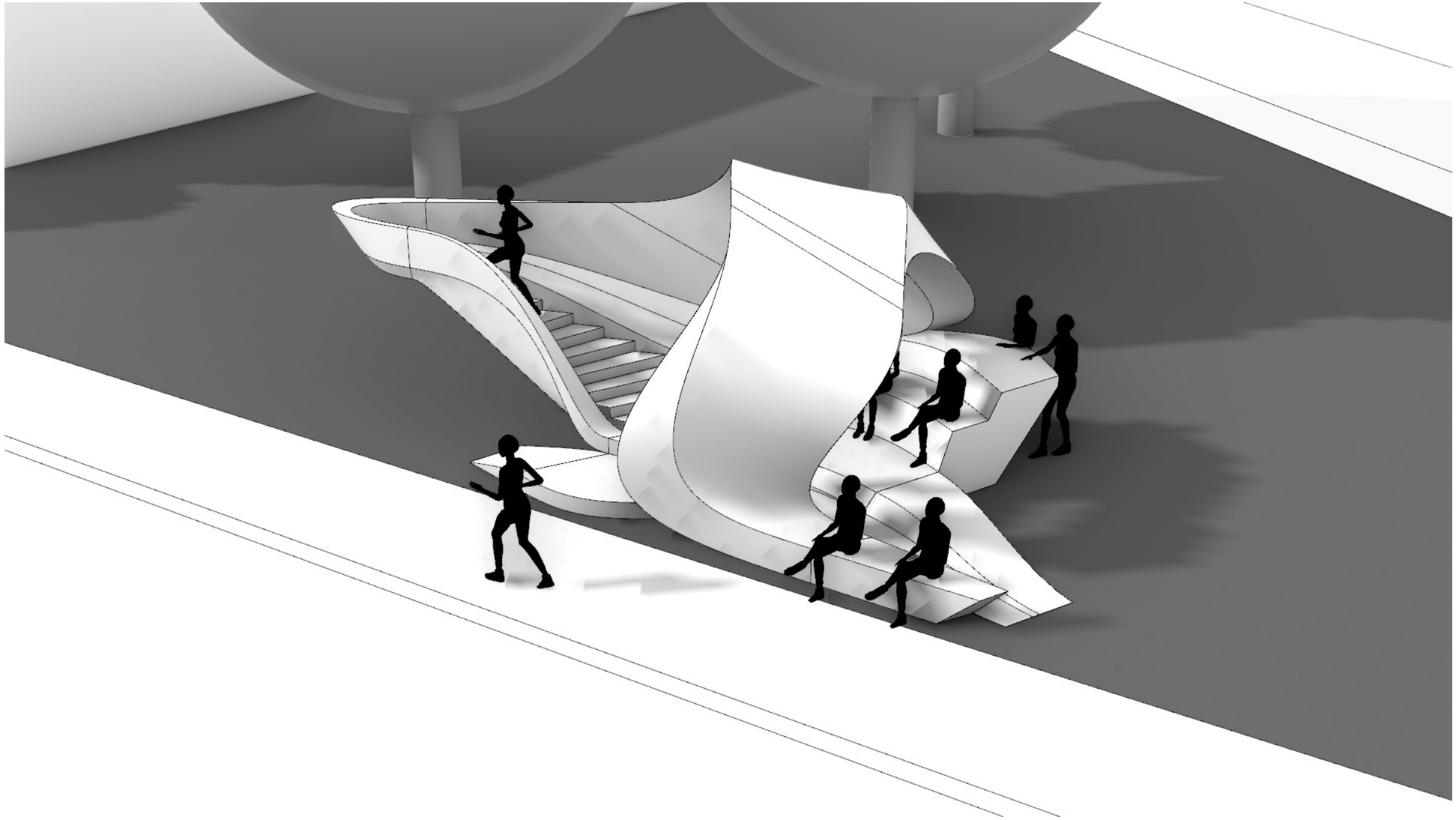




3rd Generation

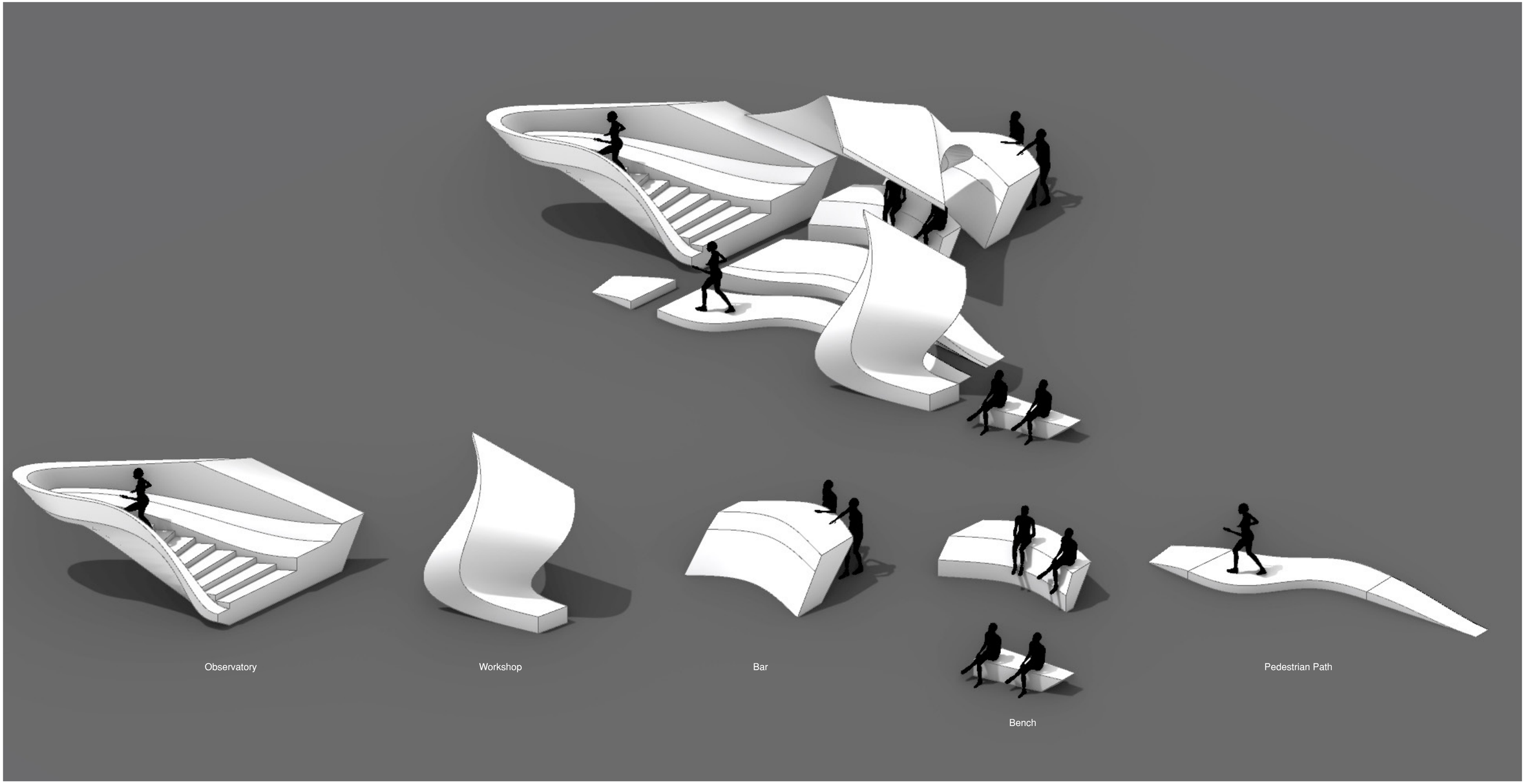
In the third generation, architectural profile originating from the experience of the Dessau Bauhaus building and station were inherited. Especially the architectural gestures from the Dessau Bauhaus, the verticality and the path under the structure is implemeted with the geometrical morphing. It means the old architectural aspects are being implemented with new technologies.

Schematic Design



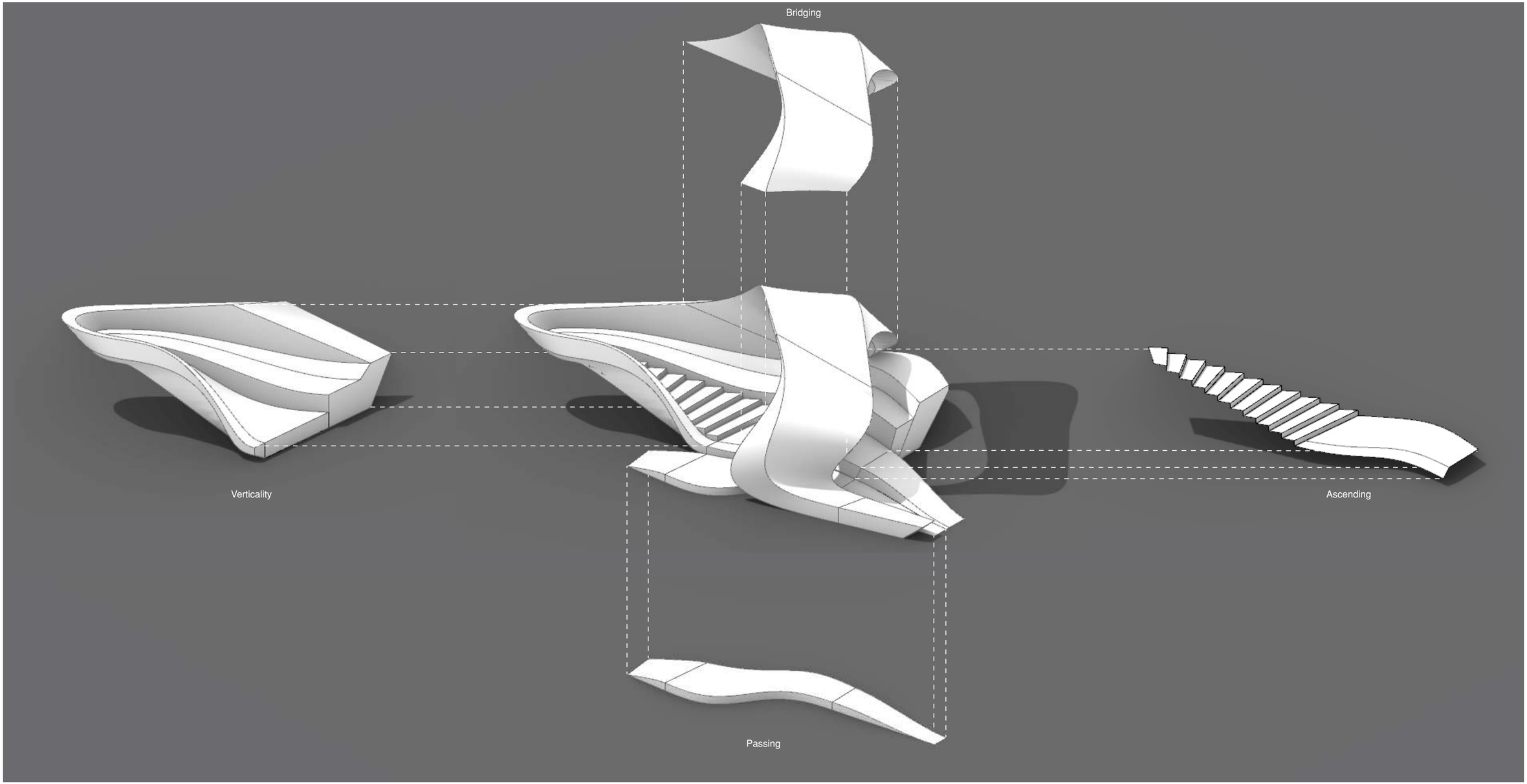
Isometric view

Schematic Design

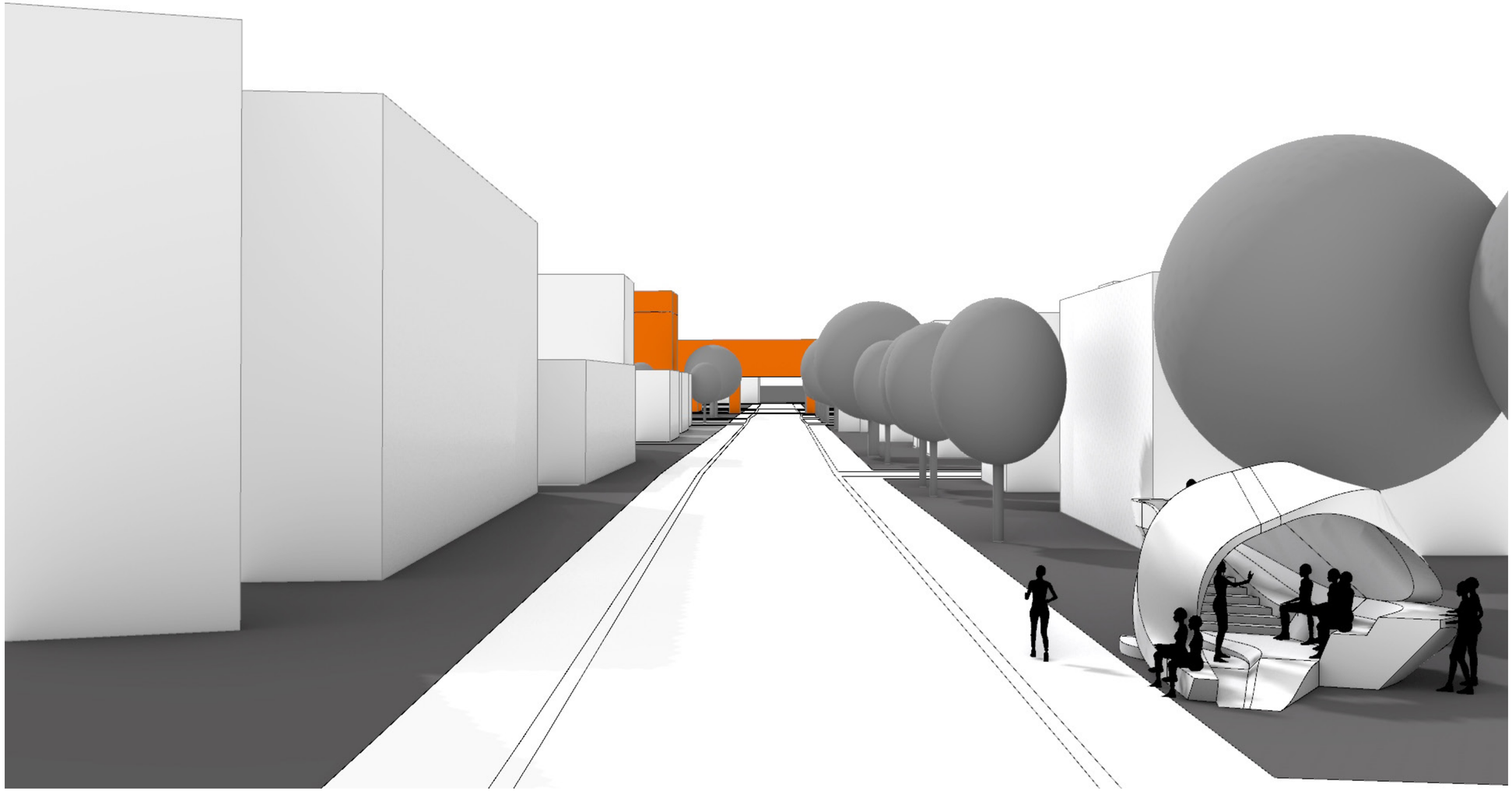


Activities

Schematic Design

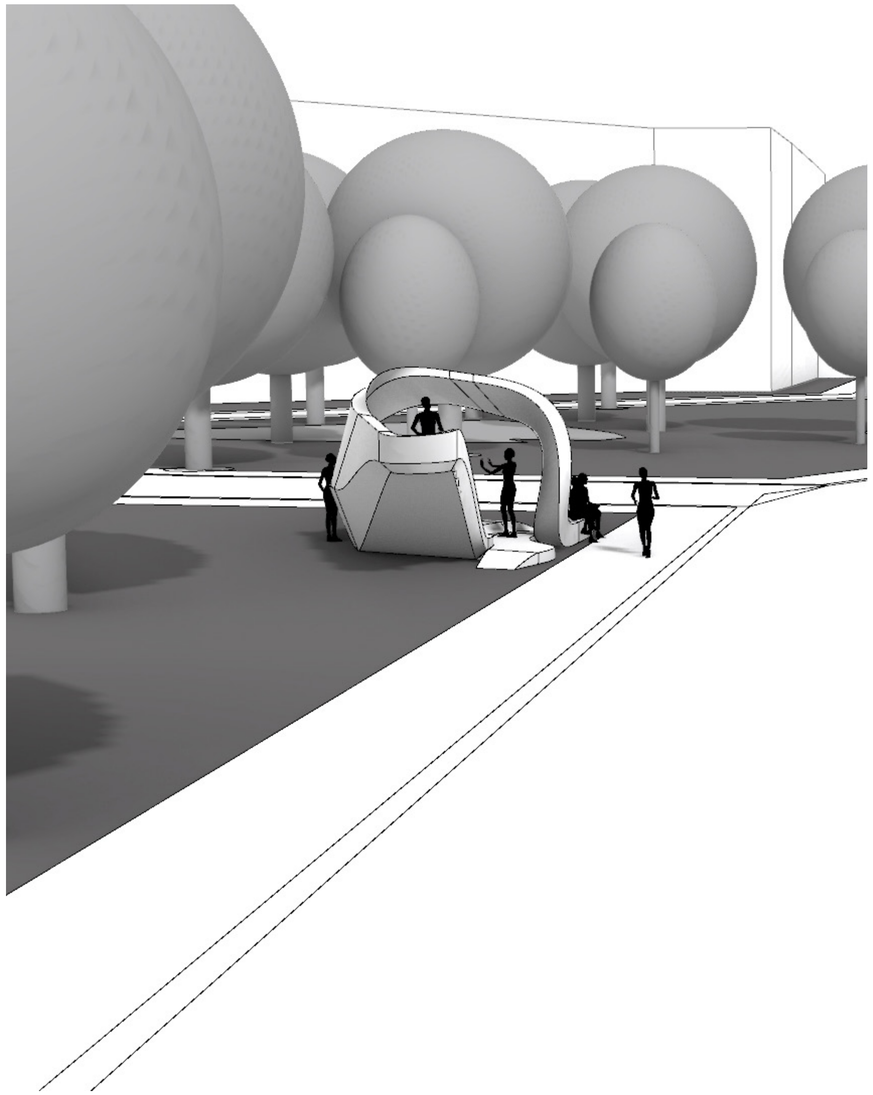


Strategy

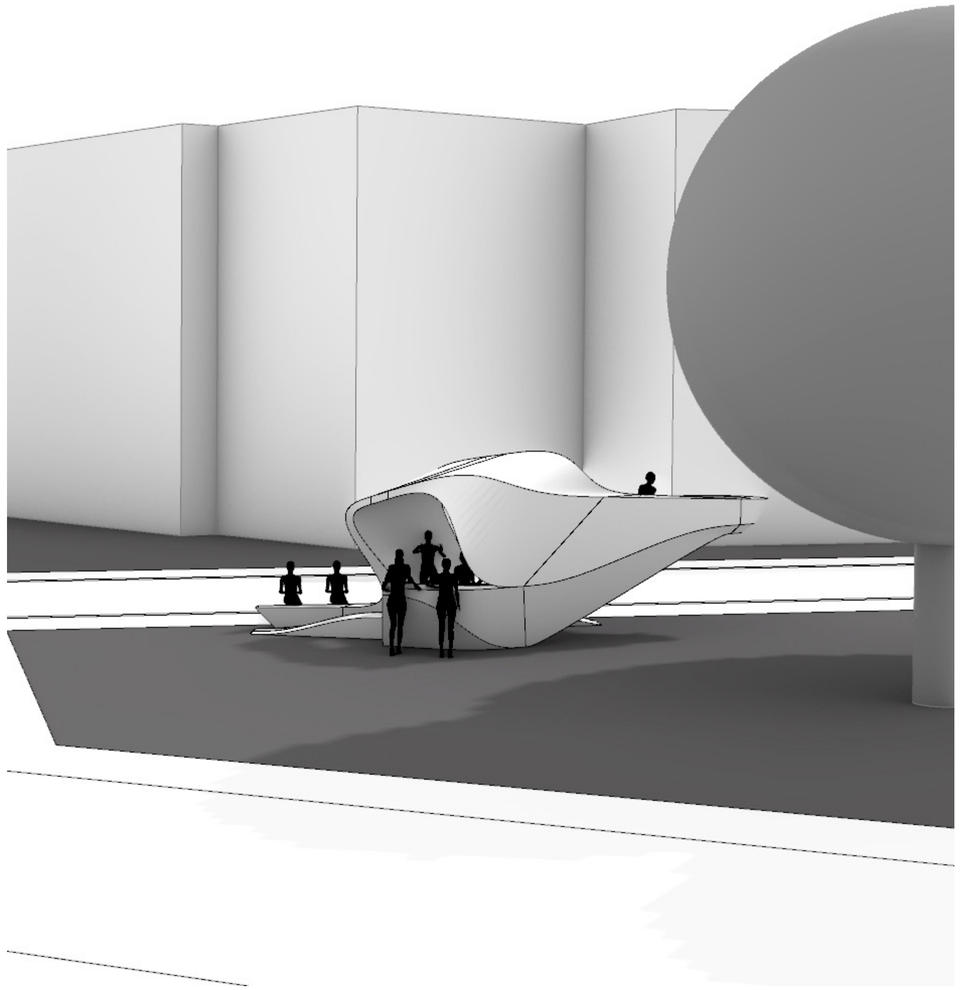


View upon Bauhaus building

Schematic Design

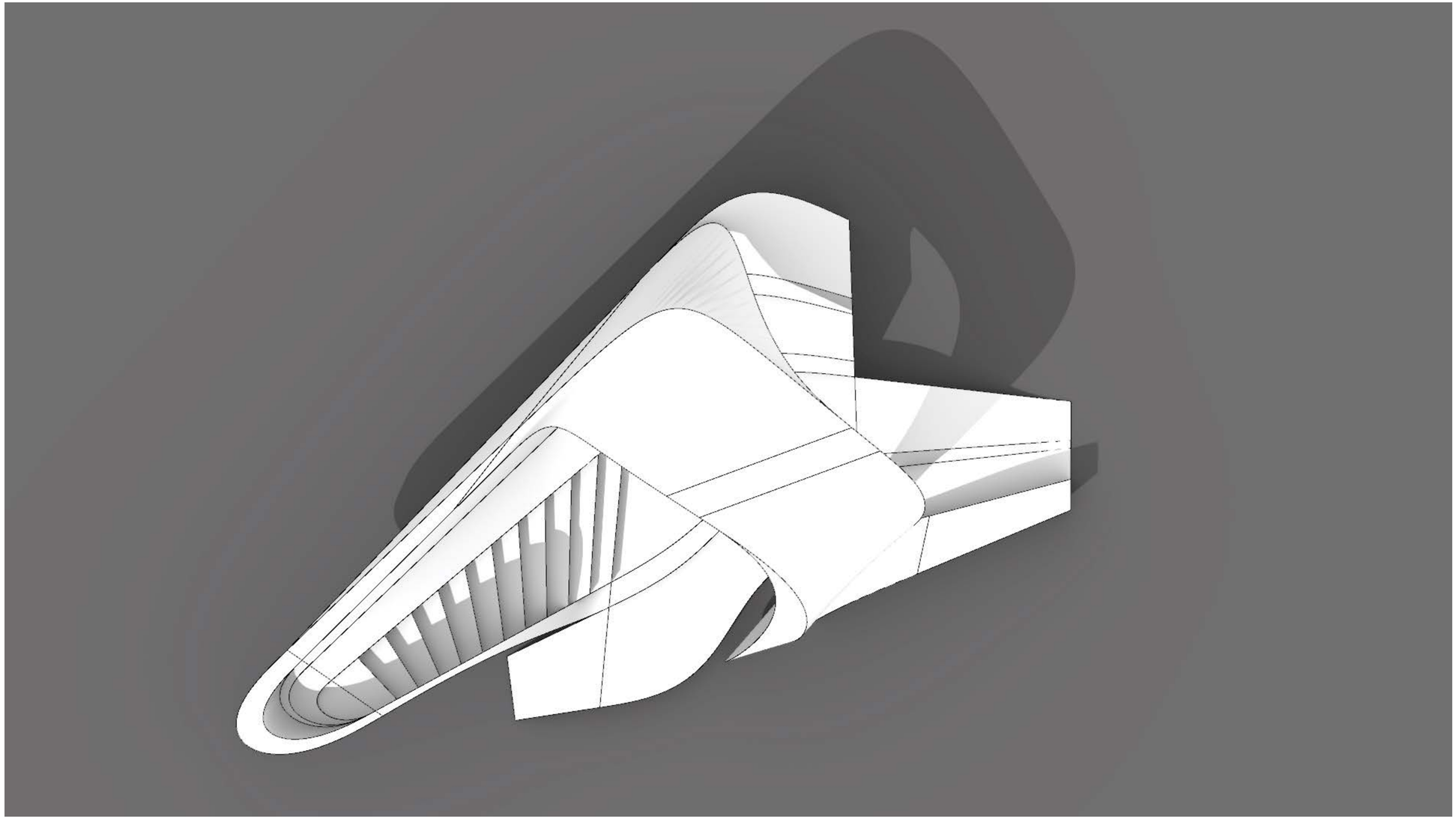


View from Bauhaus building



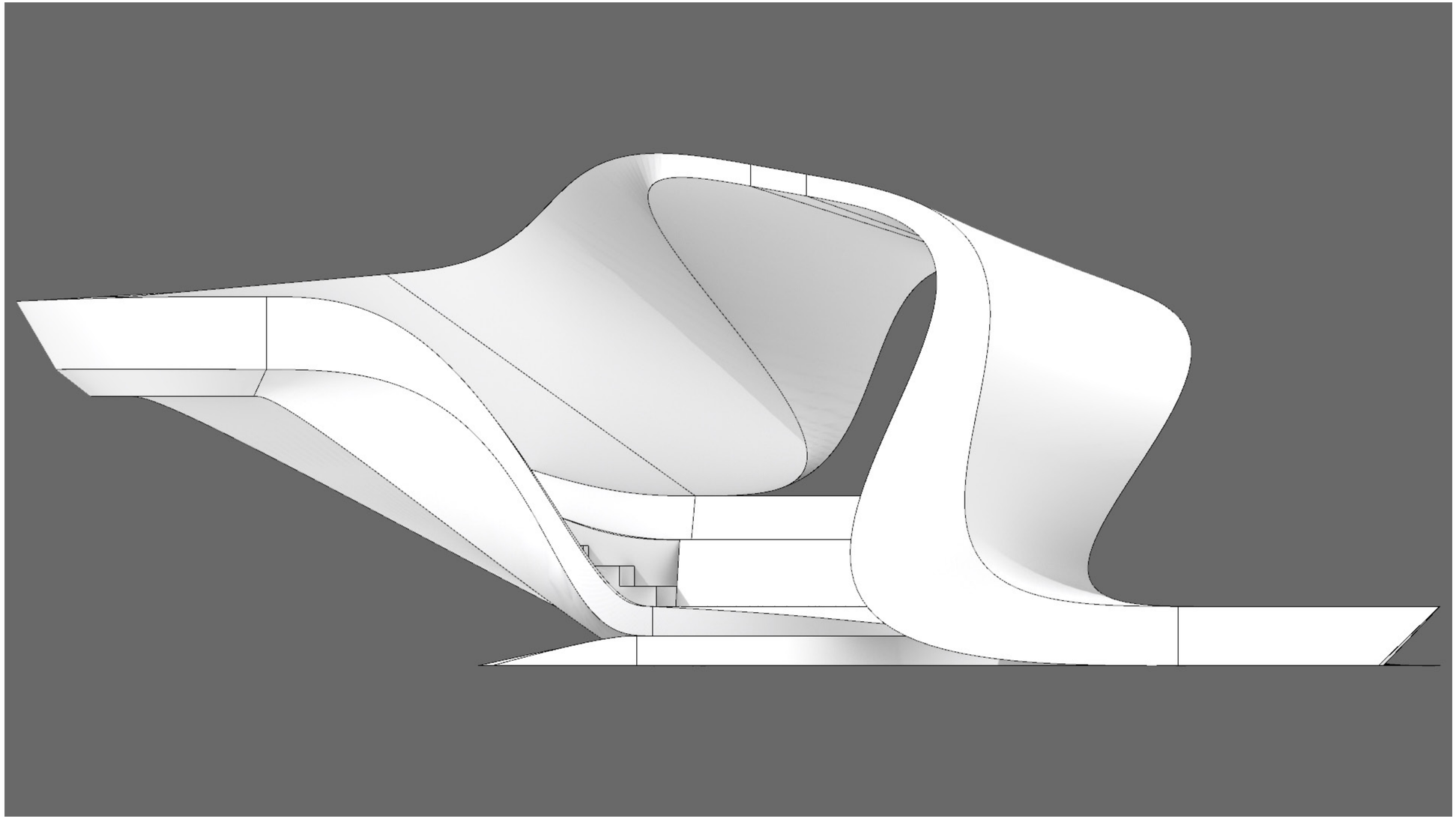
View from northside

Schematic Design



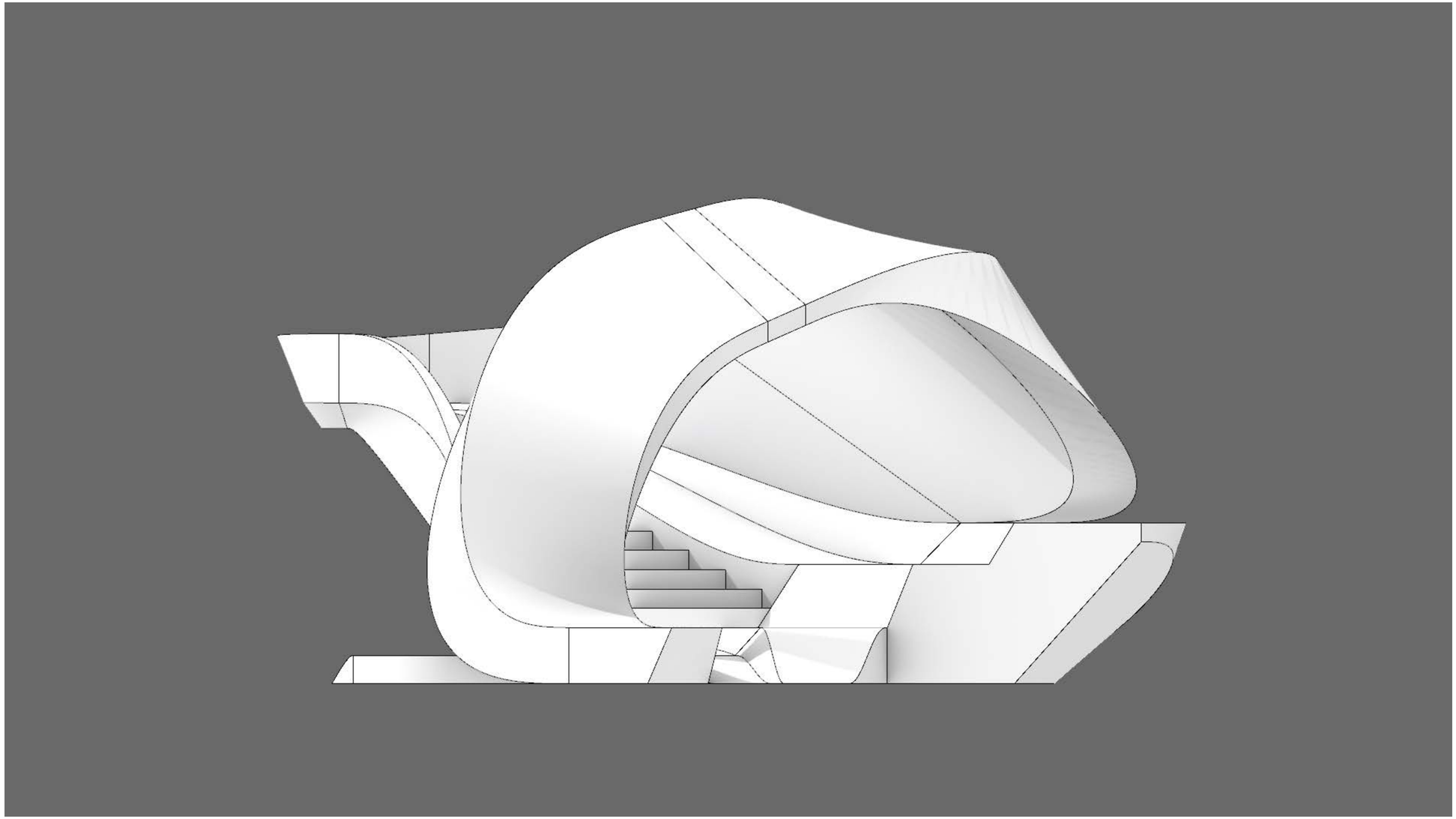
Top view

Schematic Design



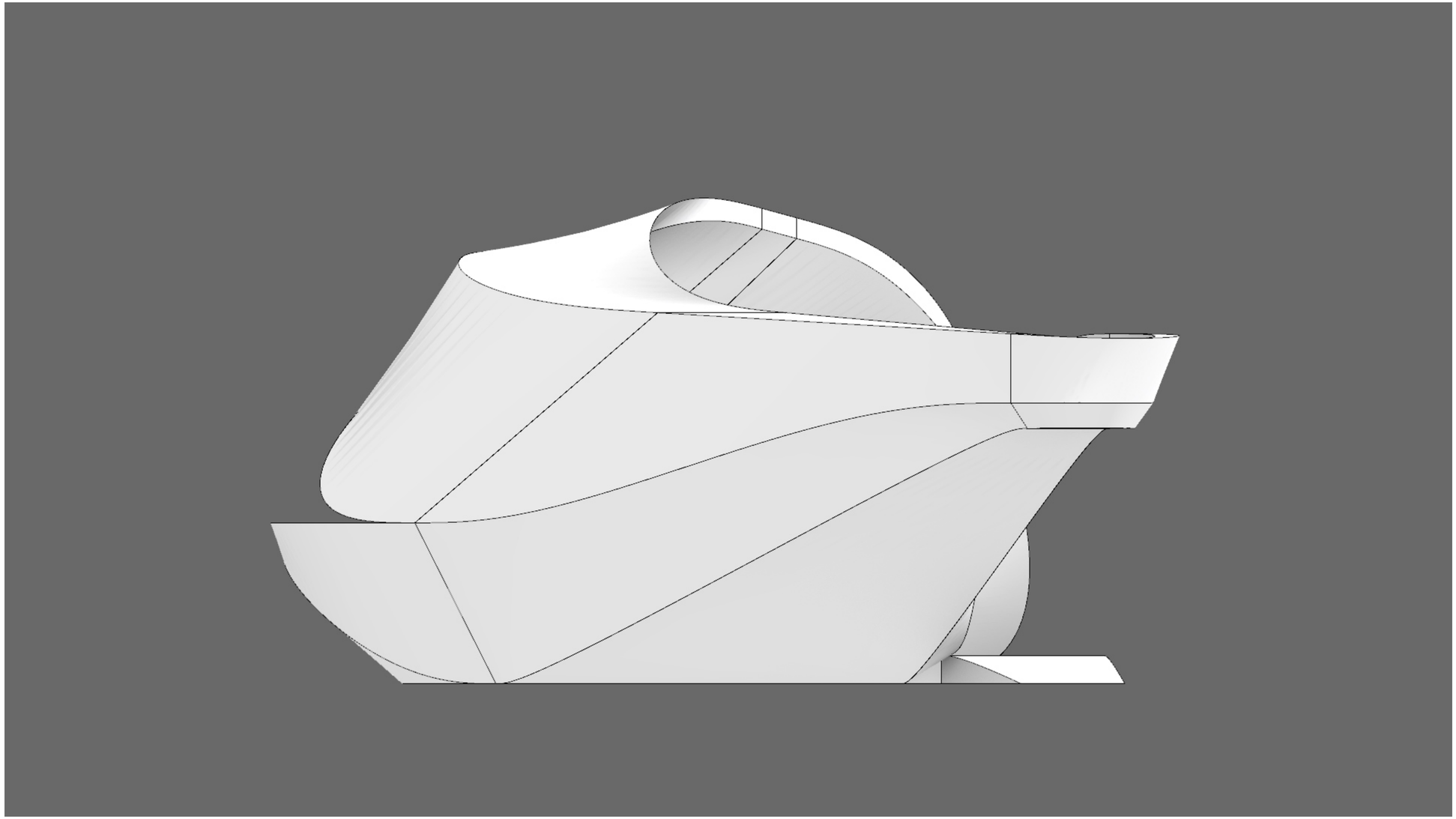
South view

Schematic Design



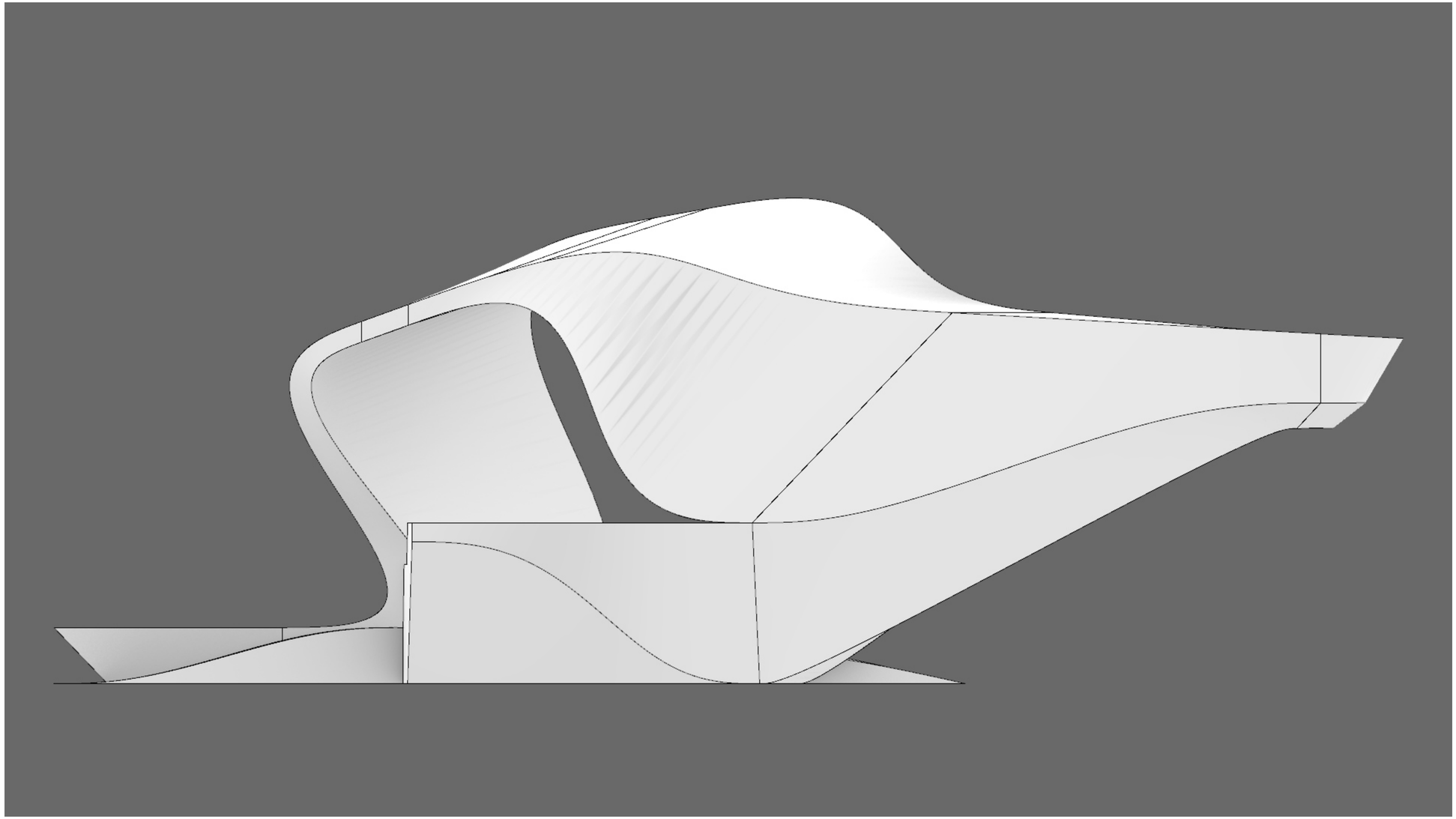
East view

Schematic Design



West view

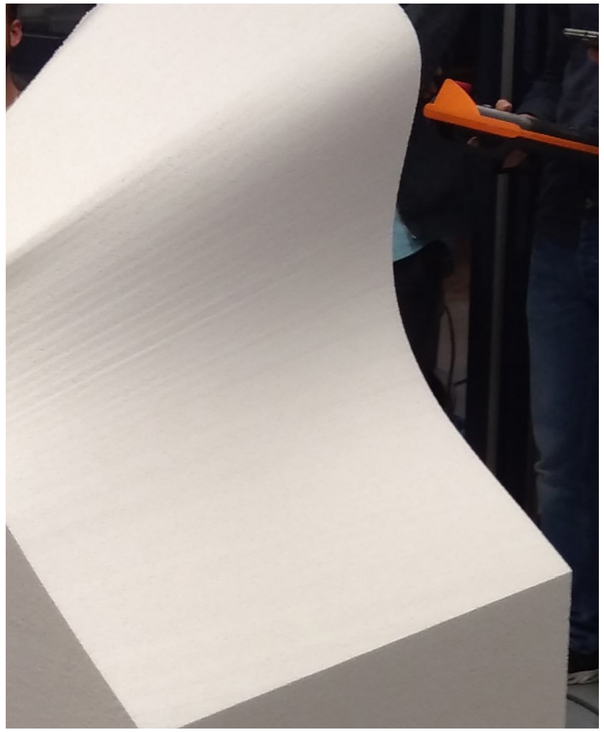
Schematic Design



North view

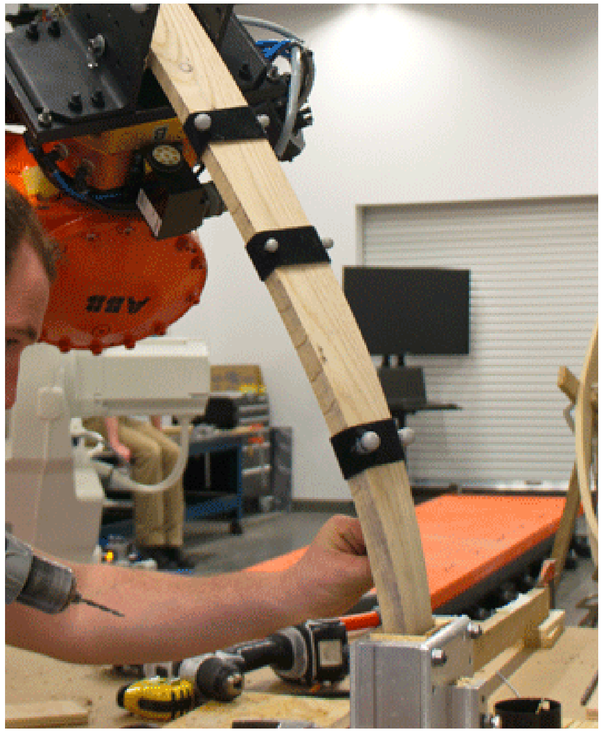
Materialization

Concrete - Foundation



EPS - Joint

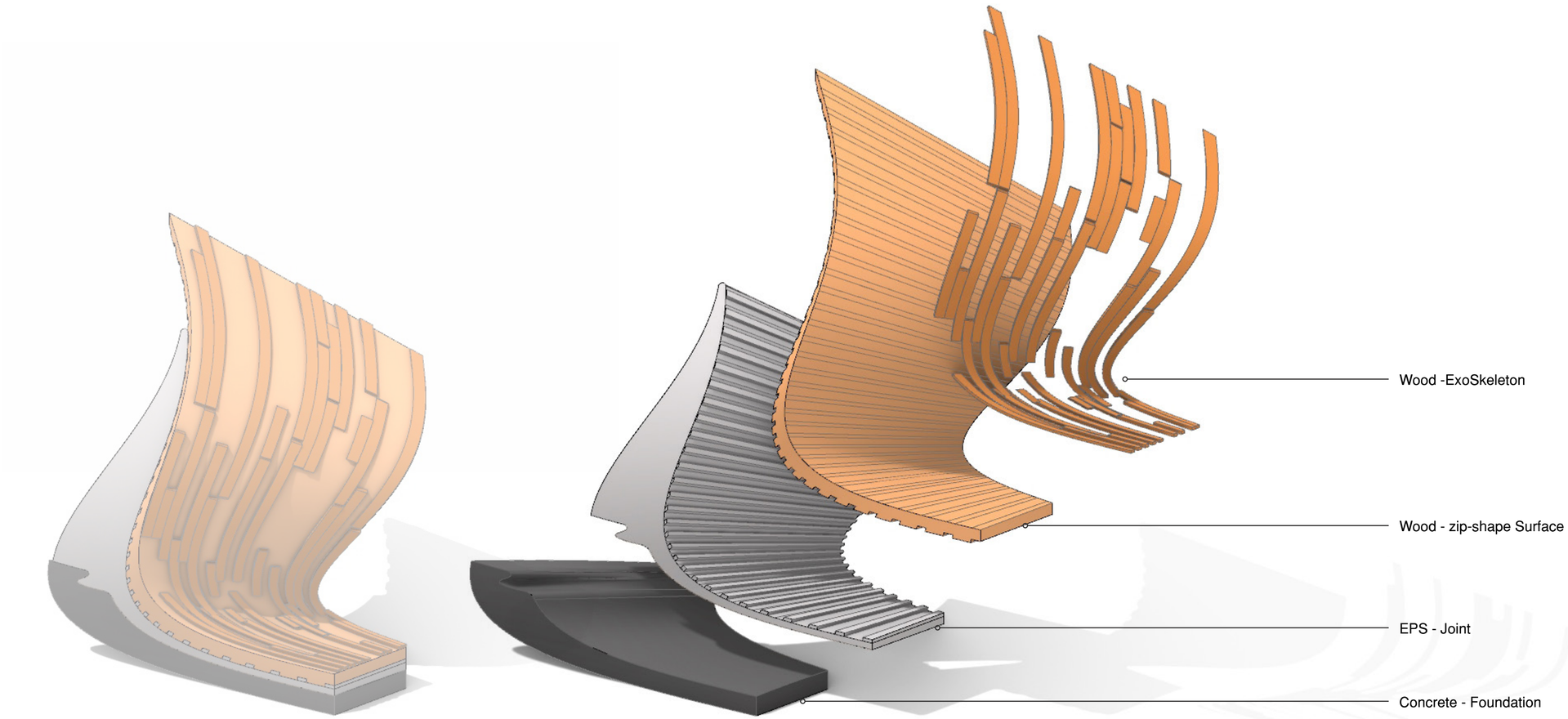
Wood - Zip Surface



Wood -ExoSkeleton

Material Reference

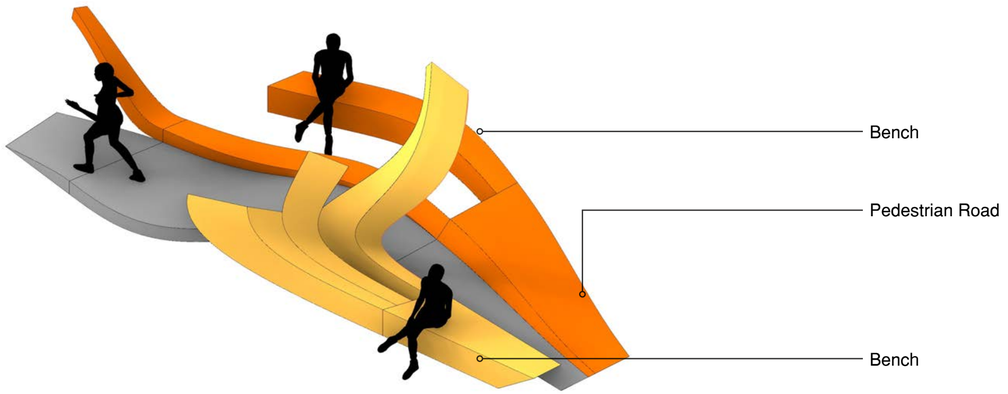
Materialization



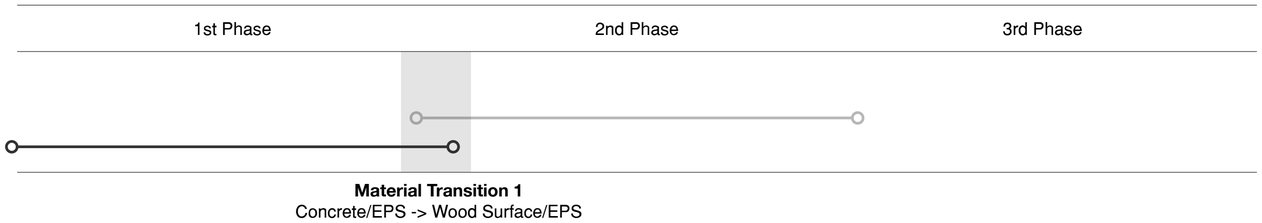
Material Hybridity

The pavilion will be built up from material hybridity. The construction phasing will gradually increase the usage of material, starting from foundation with concrete up towards the exoskeleton of wood.

Phase Sequence



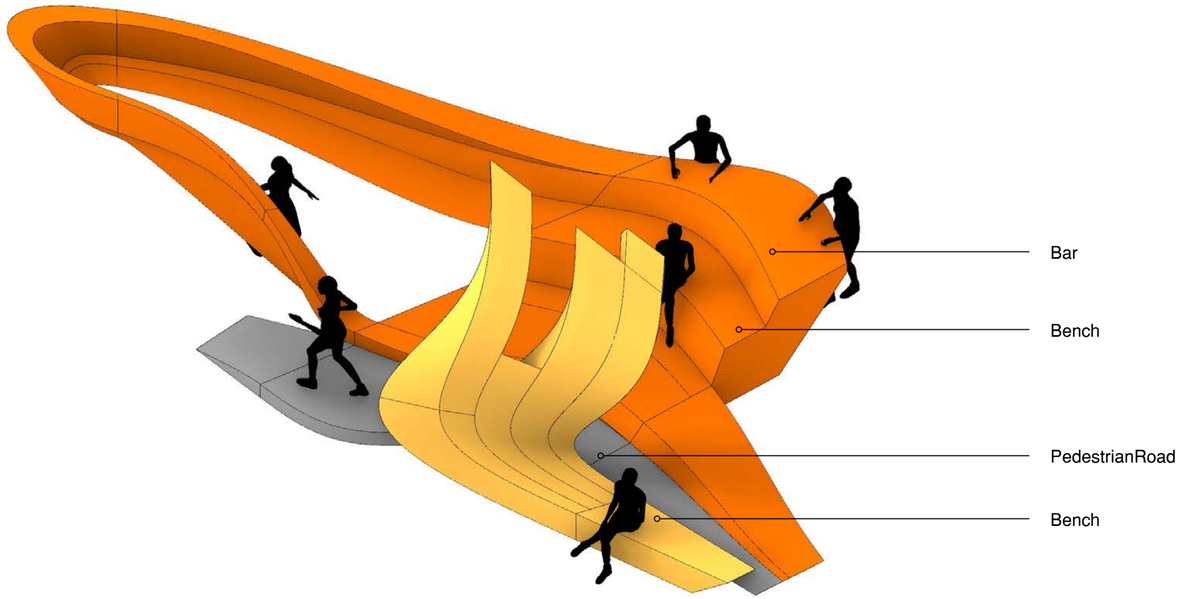
1st Phase



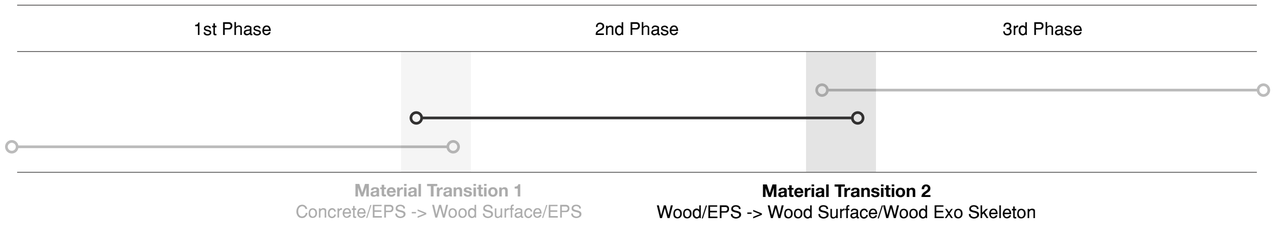
Material Transition 1
Concrete/EPS -> Wood Surface/EPS

The first phase willl provide the path to the Bauhaus, and benches. At the same time, the material hierarchy is based on the combination of the concrete and EPS, but will start to use the woods as the material for surface. The phasing system will suggest the materiall transition sequence, functional sequence, and spatial sequence of the 100Y bauhaus Pavilion.

Phase Sequence

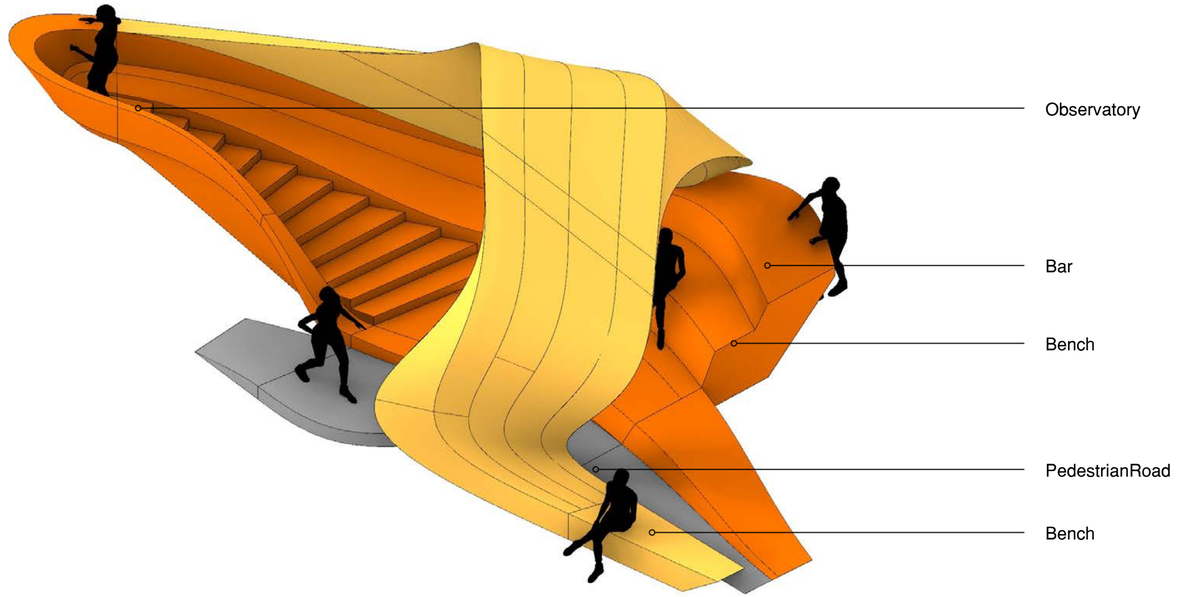


2nd Phase

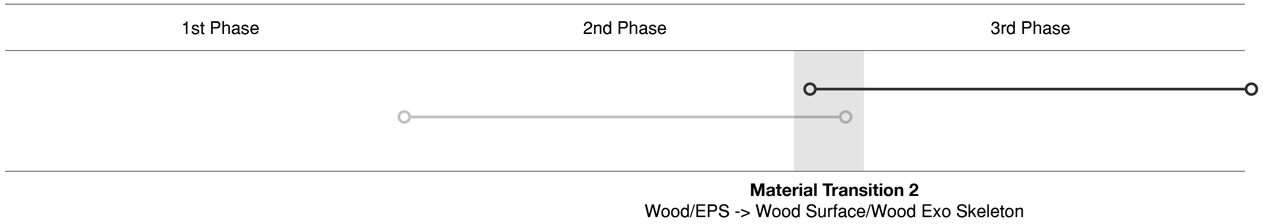


The second phase contains the bar and higher position bench. Material transition will also go the the next phase, from the combination between wood surface and EPS to the combination of the wood surface and wood exo skeleton. This phase is the beginning of the usage of wood as the main material of the pavilion. Furthermore, part of the observatory will be built as a spatial frame of the Dessau Bauhaus.

Phase Sequence



3rd Phase



Material Transition 2
Wood/EPS -> Wood Surface/Wood Exo Skeleton

The Final phase will install the observatory, and connect all the components. The material phase will be based on wood materials.
In conclusion, the final phase will implement whole architectural compopnents, design strategeis and material hybridity.