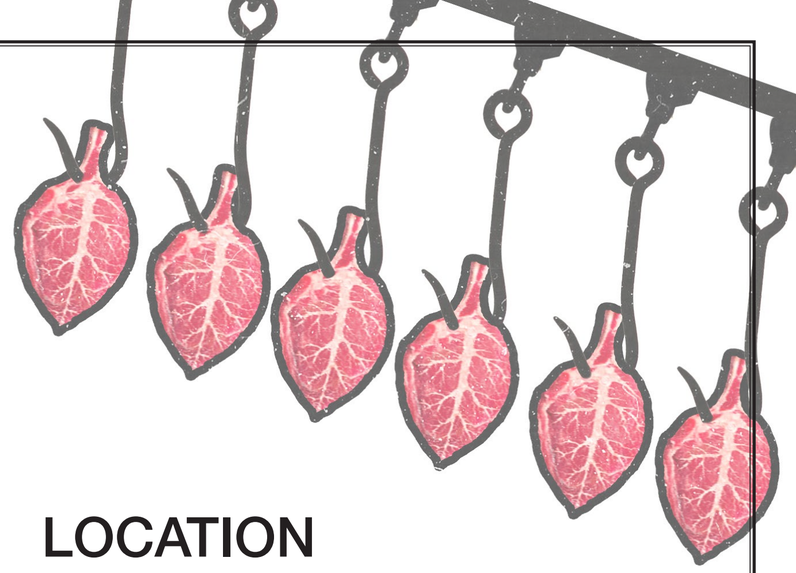
QULTIVATE



By Tommy Nagy

In the dystopian near future, this facility will be the first in the UK to grow and sell recellularized meat. Animal tissue taking over its host plant will be the future of meat consumption. The facility will take visitors on a guided tour to learn about the process, from growing to slaughter.

BRIEF

By 2050, a global population of 9.8 billion will demand 70% more food than is consumed today. Feeding this expanded population nutritiously and sustainably will require substantial improvements to the global food system – one that provides livelihoods for farmers as well as nutritious products for consumers.
World Economic Forum (2019)

Design a Food Production Centre for the year 2050 with 3 functions; Production - Selling - Education

2013 The first ever cultured meat hamburger was made in a Dutch laboratory costing $330.000.

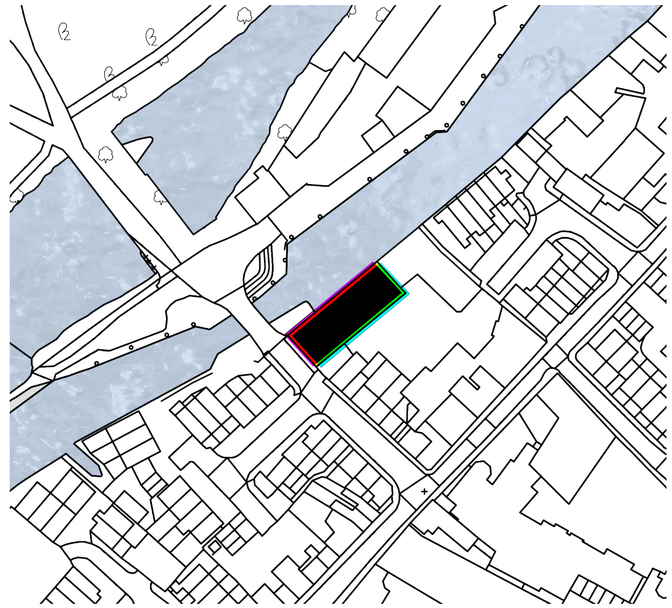
2020 Singapore is the first country to approve sale of cultured meat.

2040 Cultured meat is estimated to make up for 35% of the meat production worldwide.

2050 Recellularized meat is approved in the UK. This facility will be the first location where recellularized meat is grown.

LOCATION

48 MILL GATE, NEWARK 1:1250

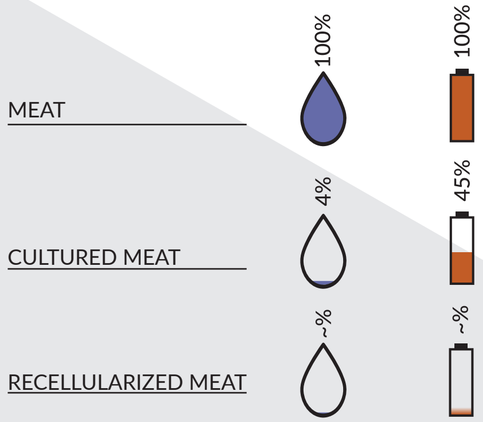


CONCEPT

With the world slowly moving toward the consumption of cultured meat, this concept will look at the possible next big step to revolutionize the meat industry; Recellularized meat. This technique allows animal cells to grow within a decellularized plant. Currently, this alternative is in its infancy, with research being done on the possibility of growing human tissue in plants to restore organ tissue. One of the benefits of recellularized meat over cultured meat is that the structure of recellularized meat is similar to naturally grown meat, creating a more pleasurable eating experience. This concept will focus on the possibility of having a centre for production, education and selling of this new meat alternative.

PROCESS

Various plants are deemed viable for the process, like apples, grapes and spinach leaves, and this project will focus on the latter. Since cells are essentially small bags of oil, a particular type of soap (SDS) is used to make the cells pop, and the plants will look ghostly white, having left only a scaffold that held the cells in place. Next, the soap is removed with distilled water. The plants are then filled with a special broth(salt, sugar, hormones, etc.) to supply the animal cells with the nutrients they need. Lastly, animal cells themselves are added to the plants and will slowly replicate.



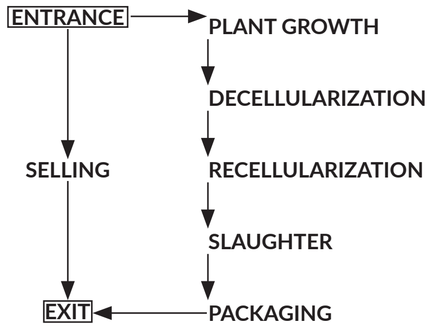
SUSTAINABILITY

The meat industry contributes to about 14.7% of the worlds carbon emissions. Therefore changing to any meat alternative will be beneficial for the environment. Not only does cultured meat reduce emission and uses less energy, water and land. It also dramatically reduces the harm to animals. If you then look at the possibility of using recellularized plant meat, which has the potential to be a simpler and faster process, the impact on the environment can be greatly reduced.

NARRATIVE

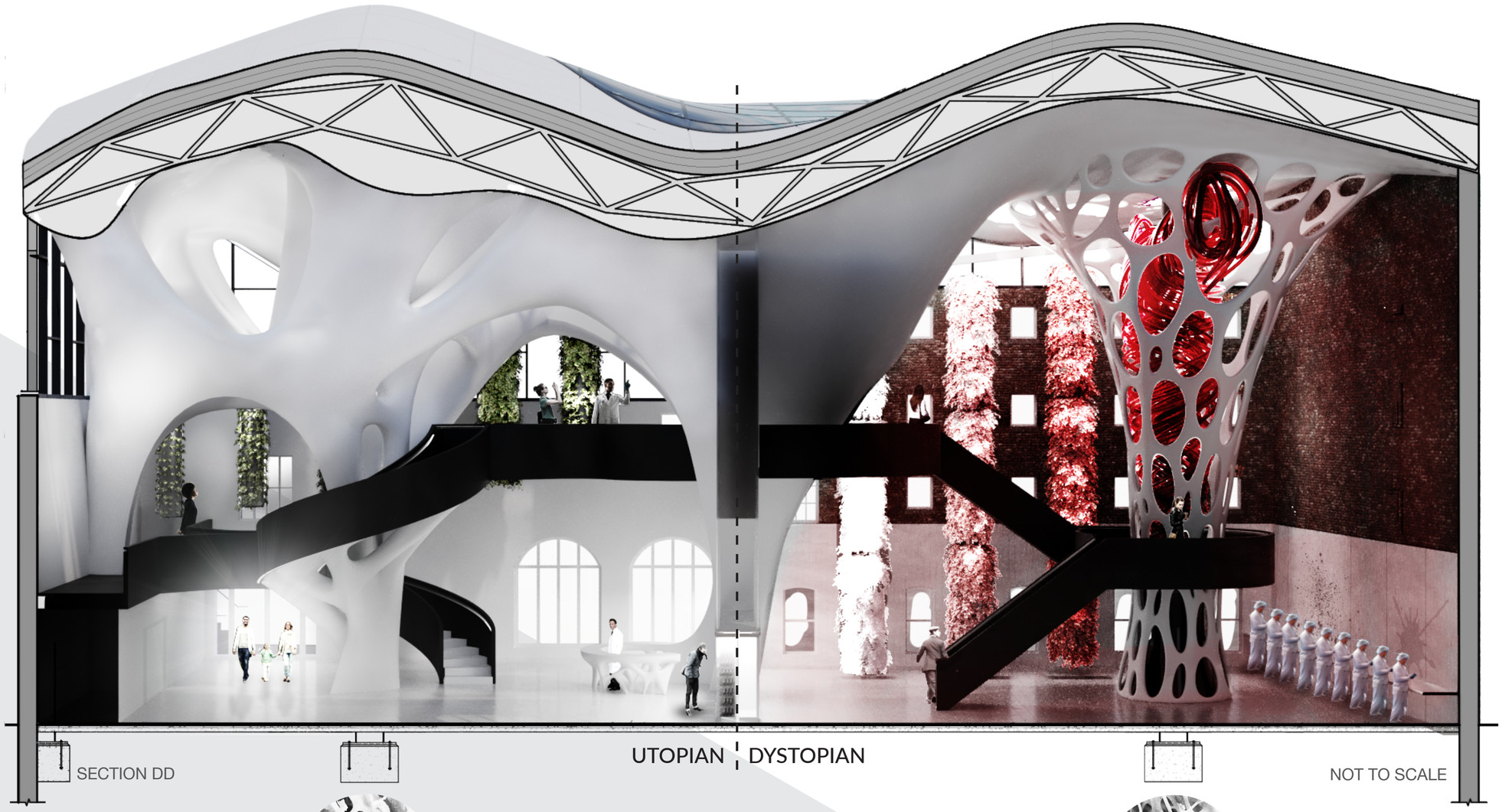
The narrative of this design is inspired by a classic novel/film narrative in which the observer first considers the new environment to be a Utopia only to be slowly revealed to be a Dystopia. In the design, this narrative coincides with the process of recellularization, where the process of the animal cells taking over the host plant sets the scene for the dystopian environment.

ASSOSIATION DIAGRAM



MOOD BOARD

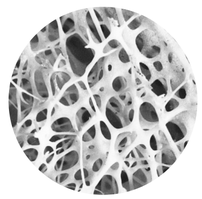
The Utopian side has neutral colours and tidiness that feels forced. This allows the colours of the plants to set the ambience. Green for the Utopian side, transitioning to the ghostly white leaves and the meat's red colour, creates a sense of distrust and danger.

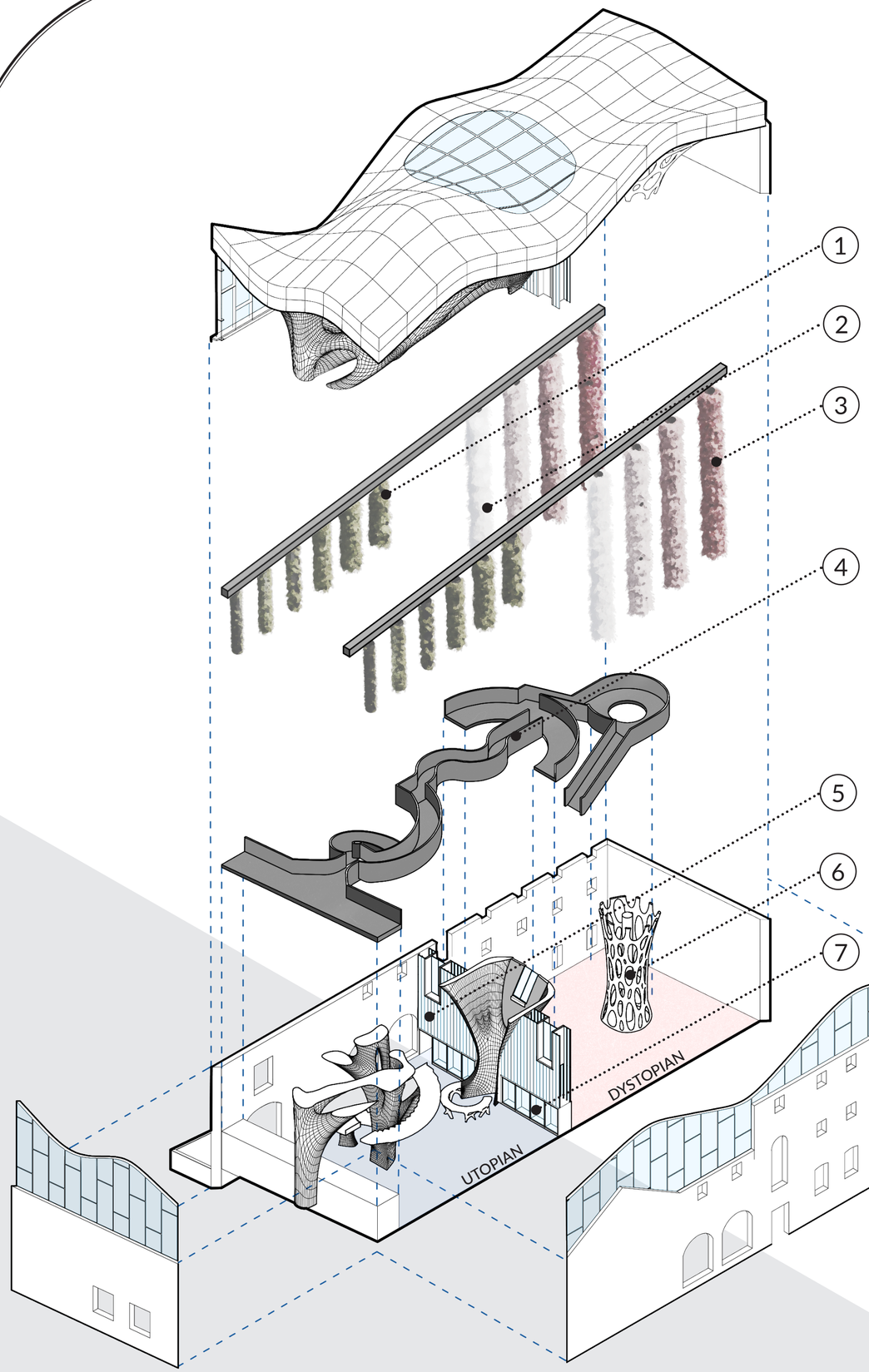


SECTION DD

NOT TO SCALE

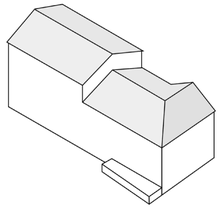
The design language of the central columns within the structure is based on the various cellular stages of the recellularization process on a microscopic level.





1

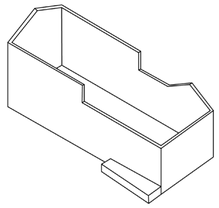
Spinach leaves are grown on vertical towers hanging from the overhead transportation system. The spinach leaves are produced to be the basis for the meat structure.



The design process of the building follows the same journey as the plants inside the facility. Starting with the original building.

2

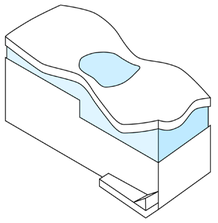
The spinach leaves will be decellularized by adding chemicals to remove all plant cells, leaving behind only the leaves' structure. The leaves will get a ghostly white appearance.



The building is stripped to its structure, with some windows and doors restored to their original 1870 state.

3

Lastly, the leaves will be recellularized by adding animal cells and nutrients into the empty structure. These cells will replicate and take over the plant, turning it into meat.



The design proposal is inserted, taking over the building with a different design language, similar to the process of recellularization.

4

The walkway takes the visitors along the entire recellularization process. It is highlighted in black, contrasting with the white materials of the rest of the building. This is done to highlight the visitor's journey, still keeping to the neutral colour scheme.

5

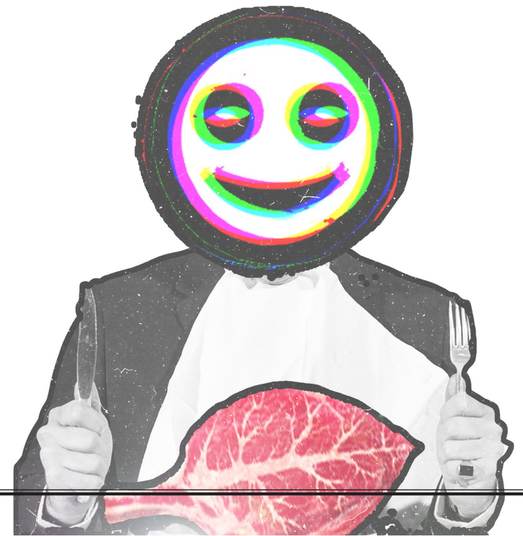
A channel glass wall separates the two halves of the building, with the utopian side where the leaves grow and the dystopian where the leaves get slaughtered. The frosted glass gives both a slight feeling of transparency and something dubious, adding to the transition from utopia to dystopia.

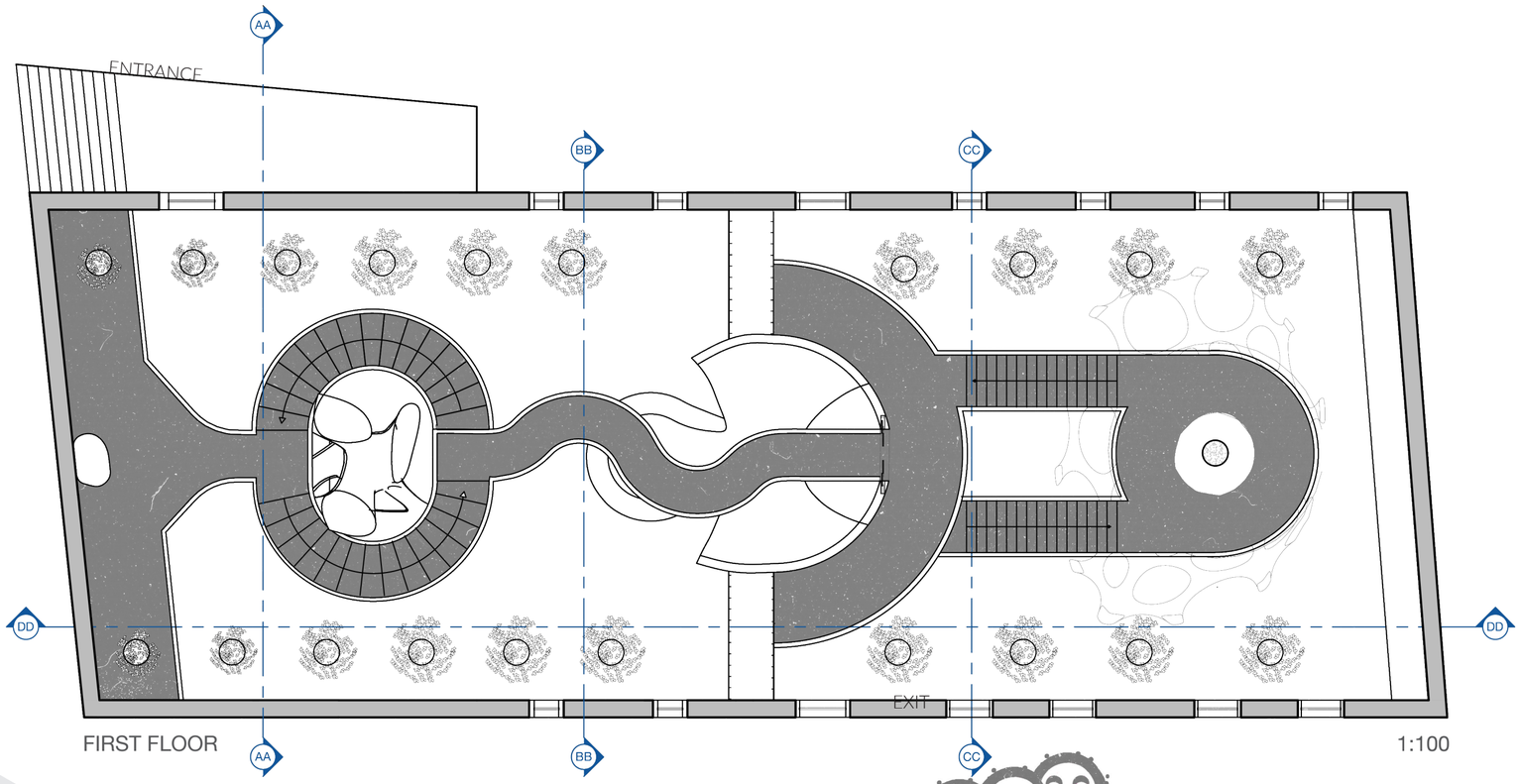
6

Within this structure, the chemicals and animals cells are pumped up through transparent tubes, adding to the dystopian atmosphere of this half of the building.

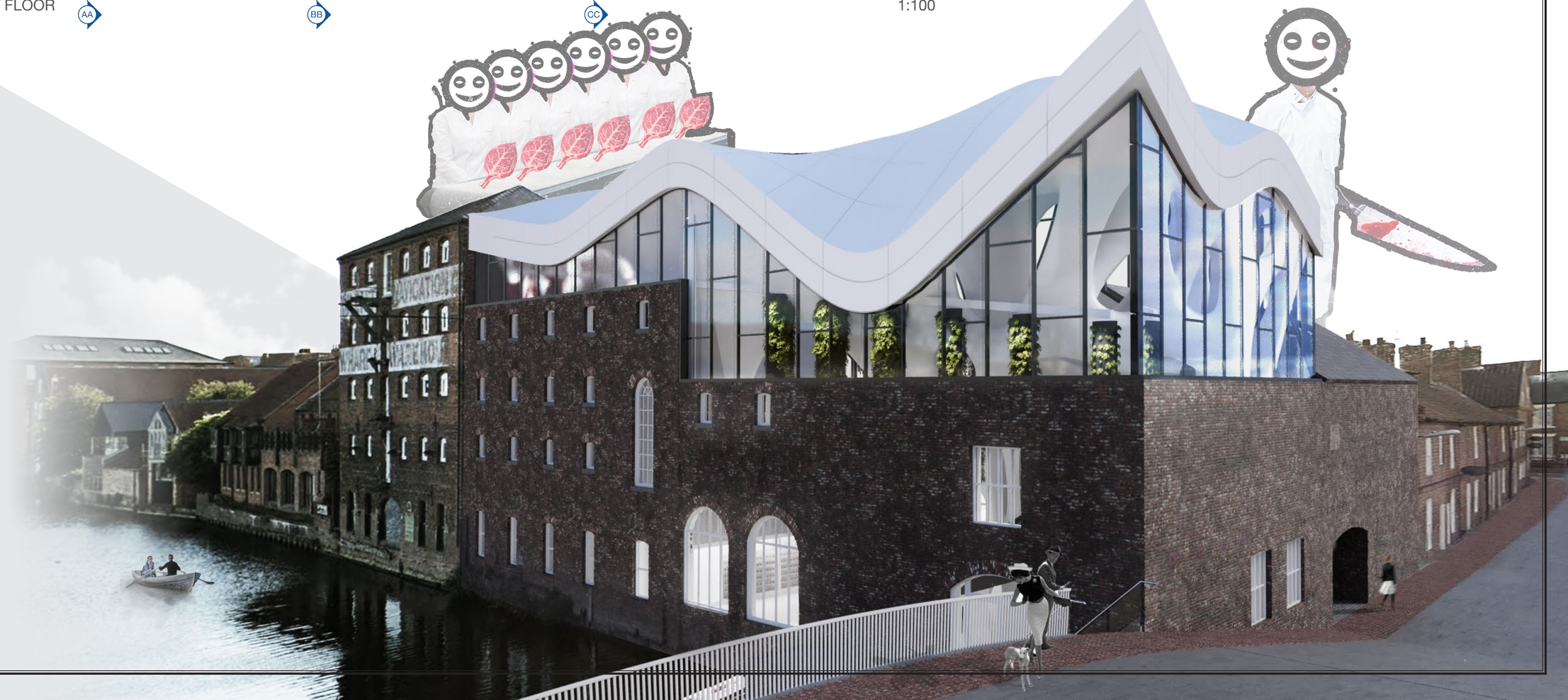
7

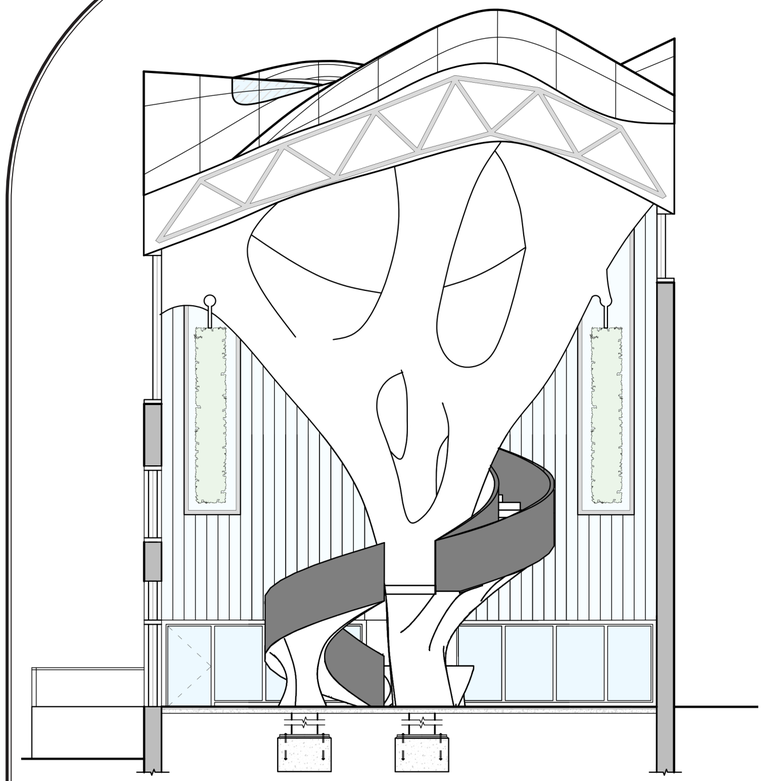
Here on the Utopian side of the building, there is a selling area on the ground floor. The fridges can be stocked from the Dystopian side so not to disturb the buyer on the Utopia side.



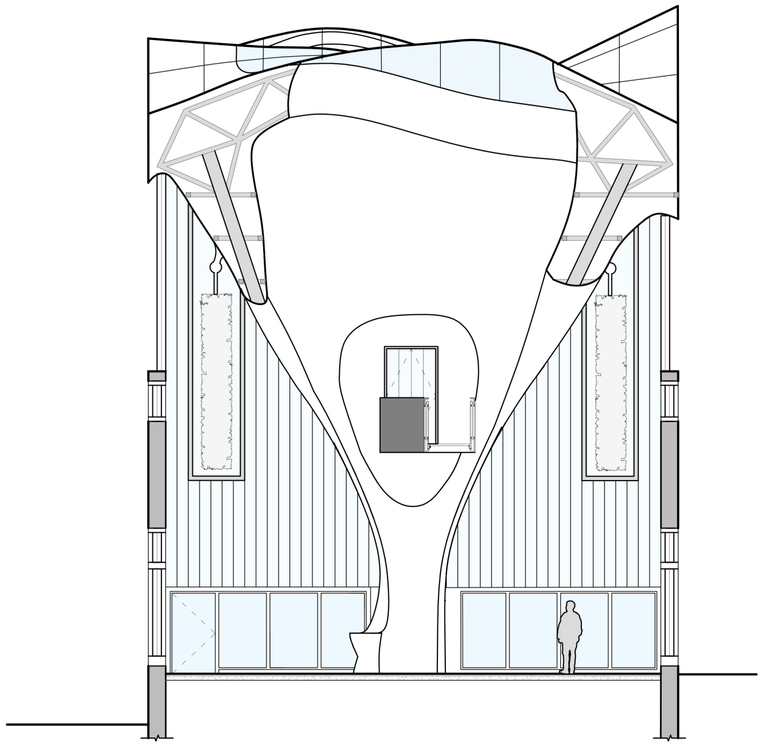


FIRST FLOOR 1:100





SECTION AA 1:100



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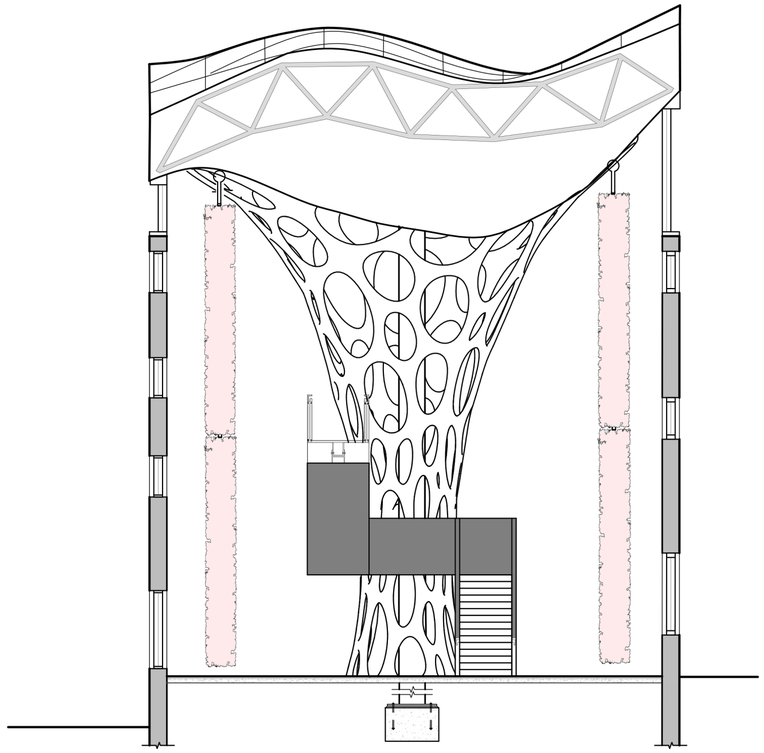

SECTION CC 1:100