digital library of duluth

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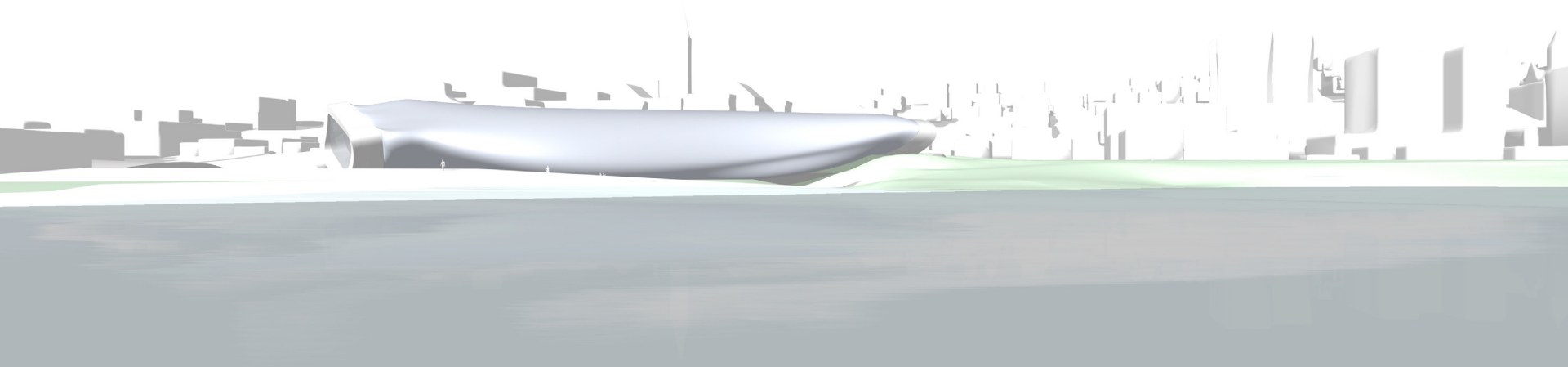


problem statement:

How do the use of advanced computing techniques influence the design of the built environment?

premises:

Software being used by architectural firms, is directly linked to traditional ways of developing architectural documentation, further restricting design opportunities.

With advanced methods such as the use of parameters, simulations, and 3d models, process should change to reflect such uses and abilities of technology.

Particularly with the use of parameters, architecture has the ability to simulate changes a building could phase through, providing an avenue directly into a dynamic architecture.

theoretical premise/unifying idea

By taking a critical look at available technologies, ourselves as architects, and our processes, we should come to the realization that outdated methods of design are severely hampering the results of our work.

History of Architectural documentation/Architectural tools

Middle Ages

Architects historically known as "master masons" derived from their having mastered the techniques of harvesting rock and forming it into specified objects.

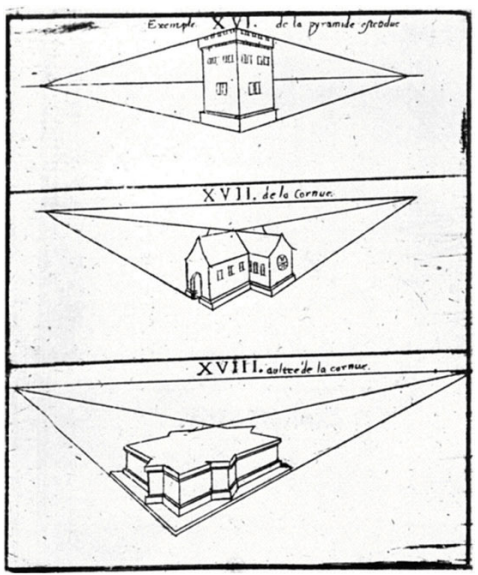
This evolved to becoming "master builders" as the pallet of materials broadened and construction techniques became more elaborate, allowing for more trades and requiring more complex production processes.

The medium of architectural documentation was limited during this time, with the "master builder" being required on site and orating how the process must proceed for the successful construction of the building.

Renaissance

Documentation shifted from the oral medium toward paper documentation, and the art of perspectives. This shift was a direct result of artists skill evolving into the inclusion of depth in their paintings, which allowed architects vision to be more aptly described through the painting medium.

The shift of the architect from on site, into a studio resulted in the introduction of orthographic drawings for builders to use on site as information directing the construction of the project.



Mid-19th Century

The gap between the construction and design of the building widened significantly when construction documents became contract documents.

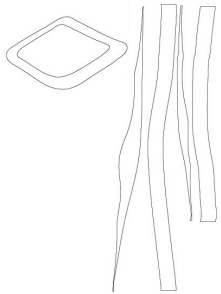
Today

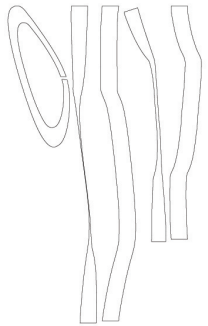
Tools, more directly computing tools, have allowed for a new type of documentation of buildings. The parametric link between buildings and 2d documentation has further shifted the architects approach from close to the construction site to further away.

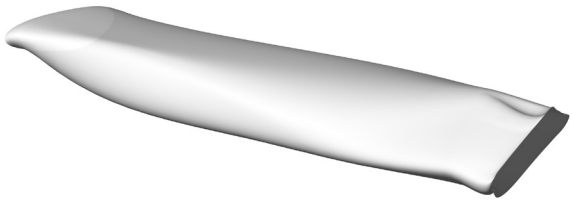
3d Modeling
Simulations
Parmeticism

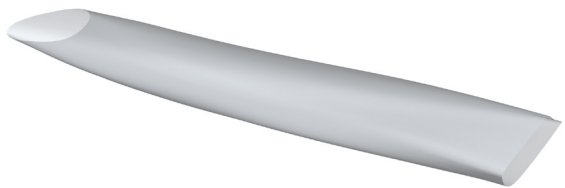
3d Models

production tools



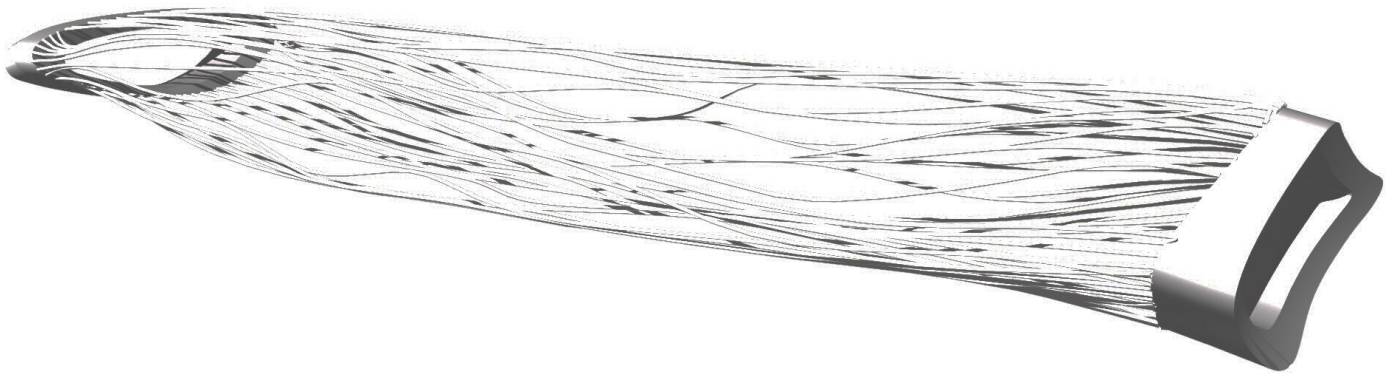






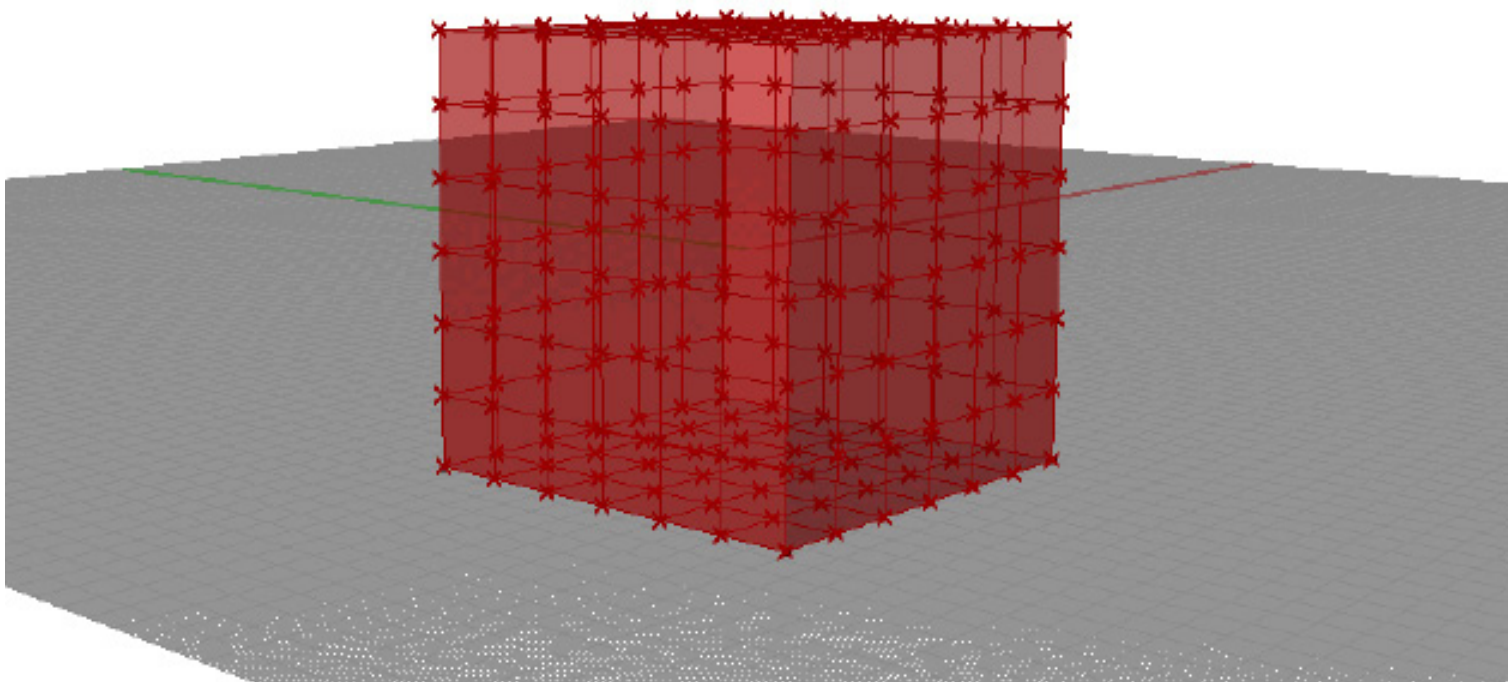
3d Models

parametrics



3d Models

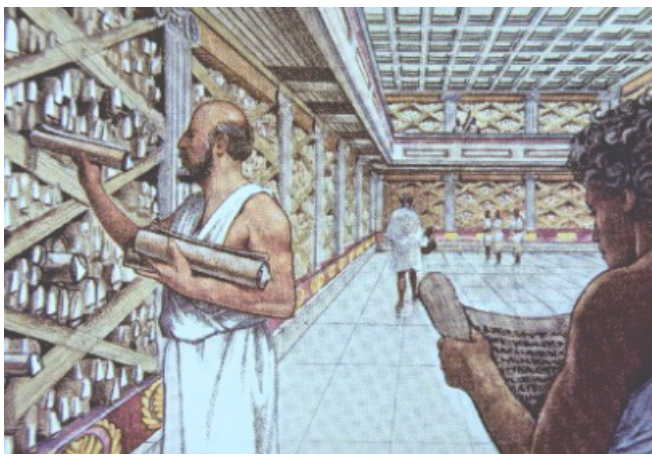
simulations



History of Libraries

Library of Alexandria

300 BC The establishment of the first known library in the world, known today as the library of Alexandria.



Presently

University of Texas Engineering Library has removed all physical books from its building, all information is accessed via the internet.

Materials

"GAPS" diet- Natasha Campbell-McBride, MD

"All diseases begin in the gut."

Hippocrates

Nano materials

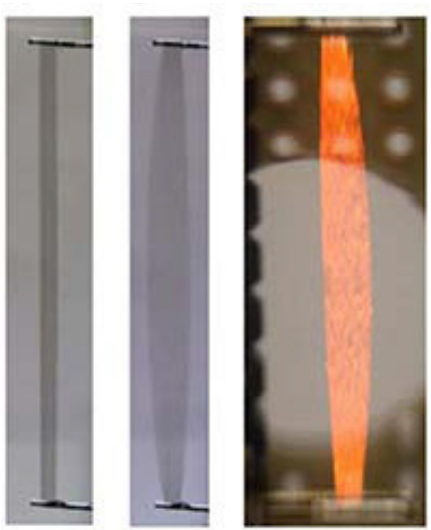
Nano materials are constructed at the molecular level.

Inherently stronger, lighter, and more durable.

Structural skin

Consists of cabon nanotube aerogel composite sheets.

Can operate in a range from below -196 c to 1538 c.
Can elongate 10 times more than natural muscles, and at rate of 1000 times faster.
Natural muscles contract at 30% per second, while these contract at 30,000% per second.



Entry Glass

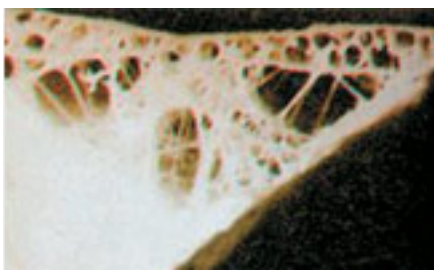
Consists of Flexible Glass

- Currently being developed for consumer products which have a need for being flexible.
- Extremely thin, very malleable.

Entry Structure

Consists of Transparent Aluminum. ALONtm

A ceramic compound of high compressive strength and durability.
The replacement for transparent amour in the armed forces.
Can with stand high impact forces from bullets.
Cost$ 10 to 15 per square inch.



Site

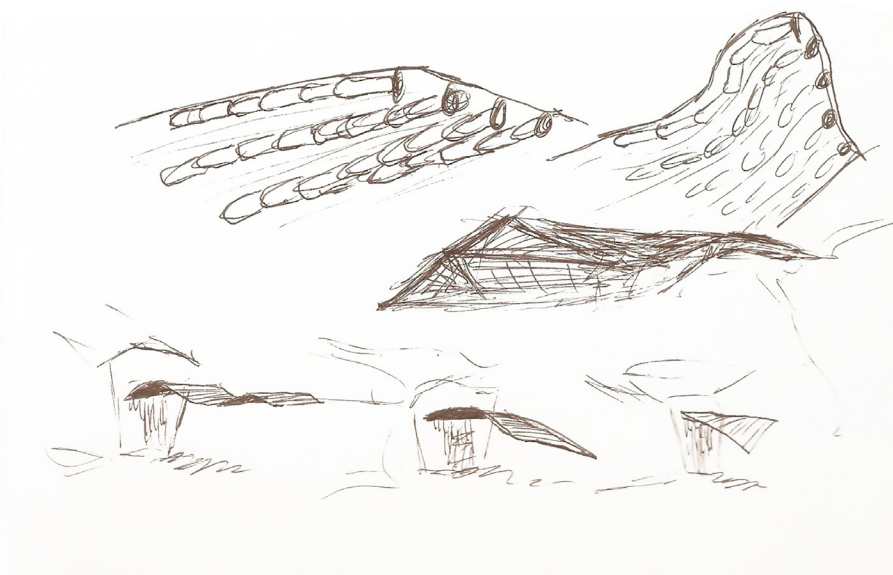
Site

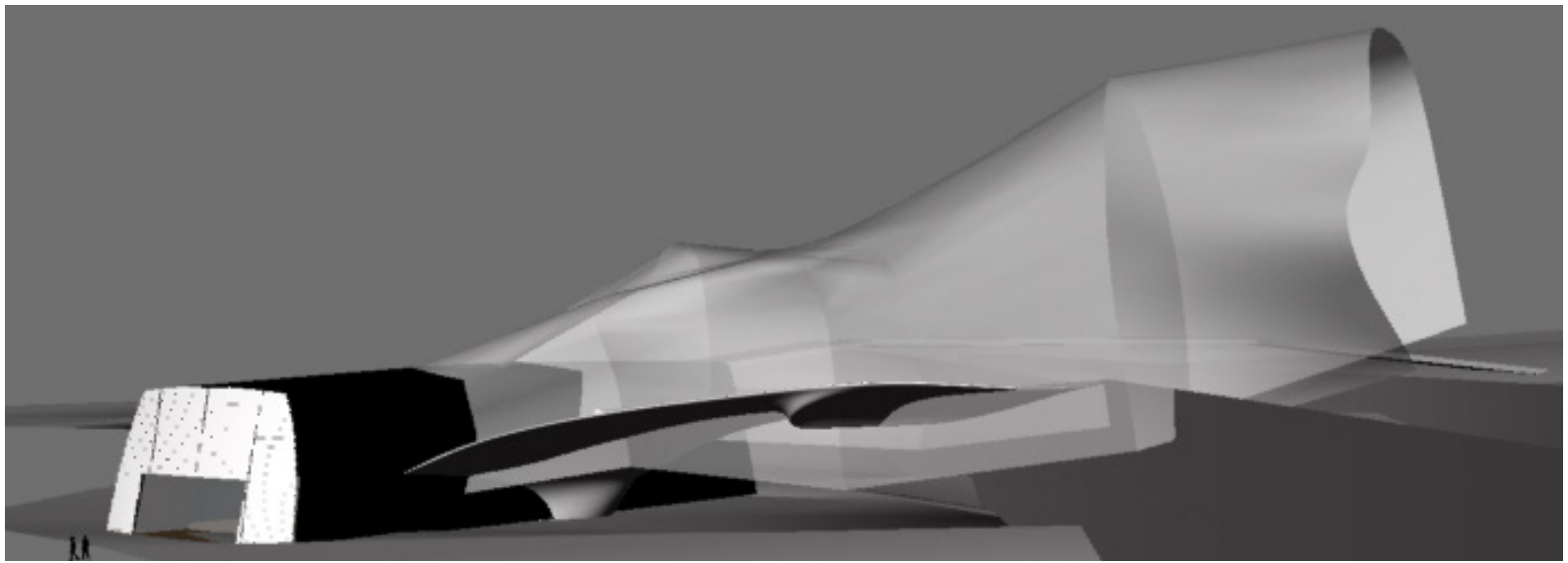
Site

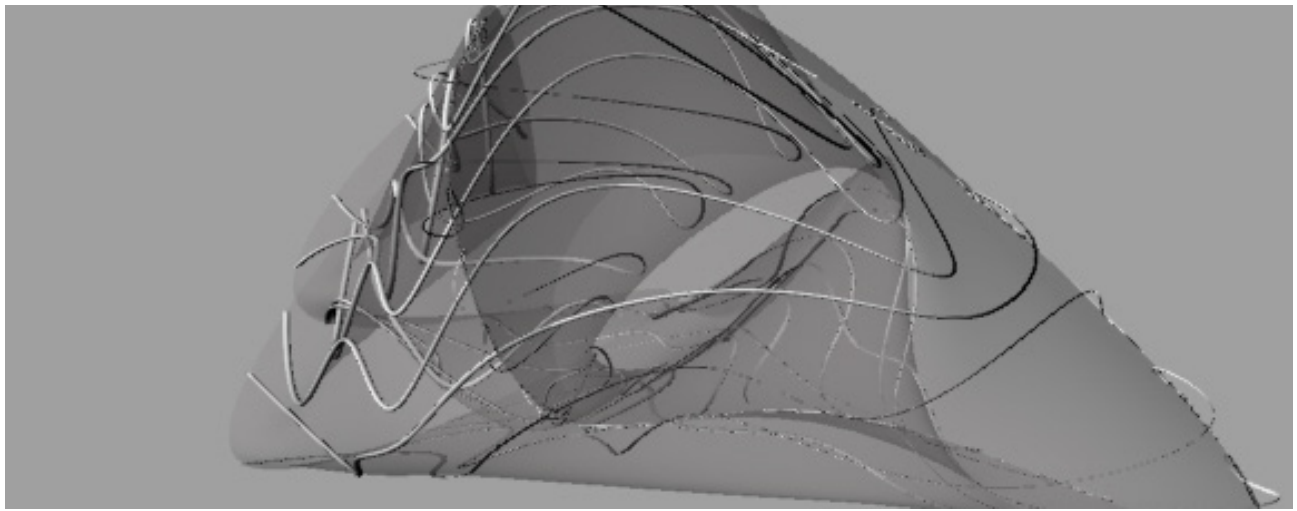
Site

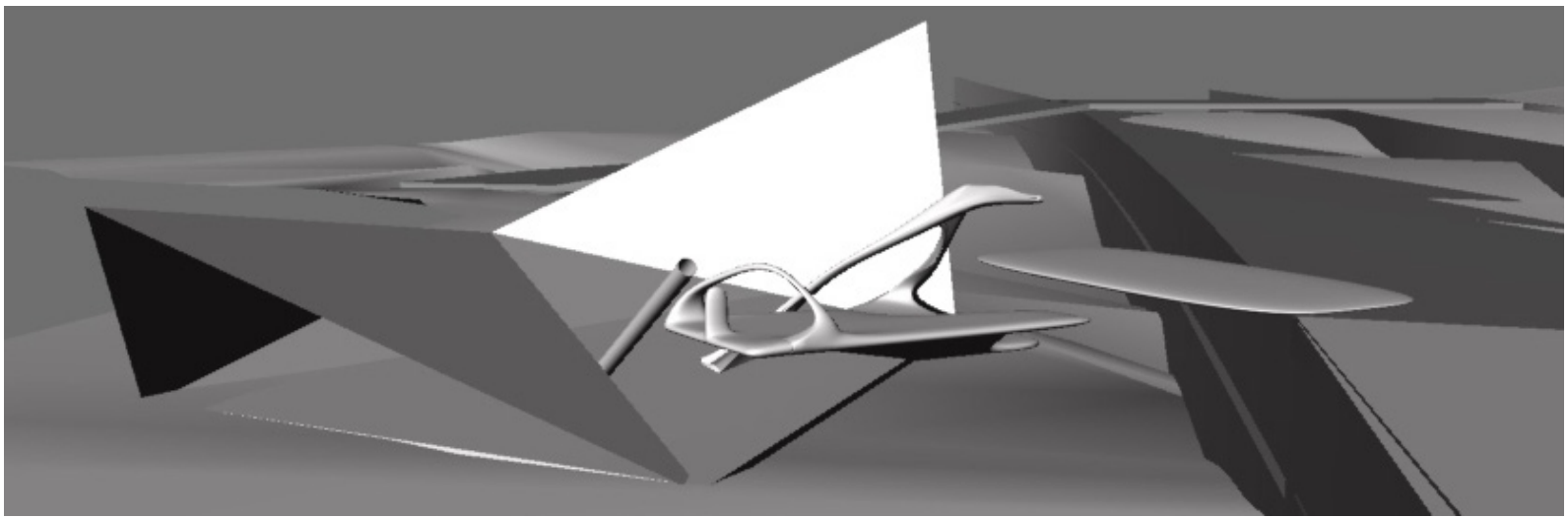
Site

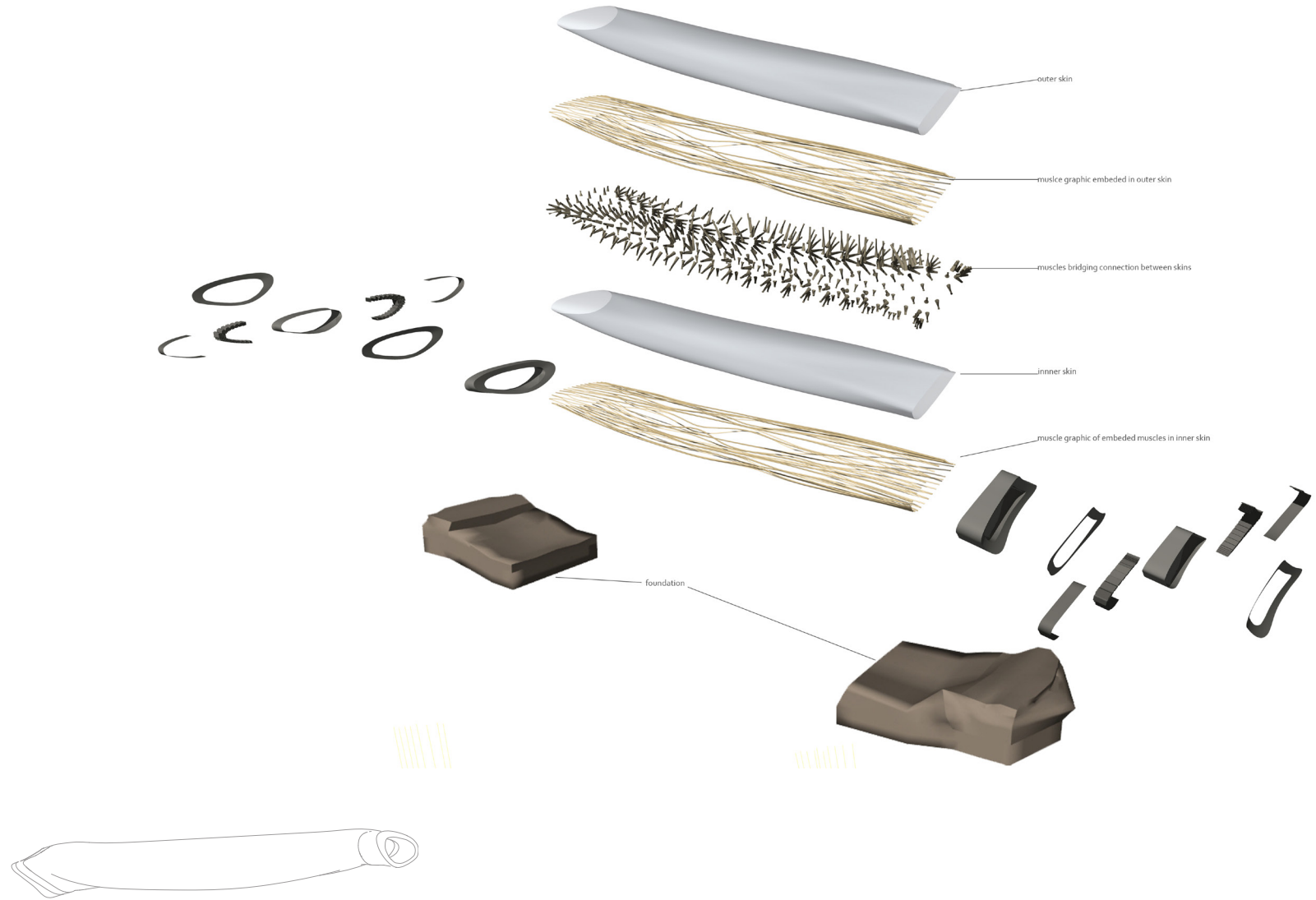
Site

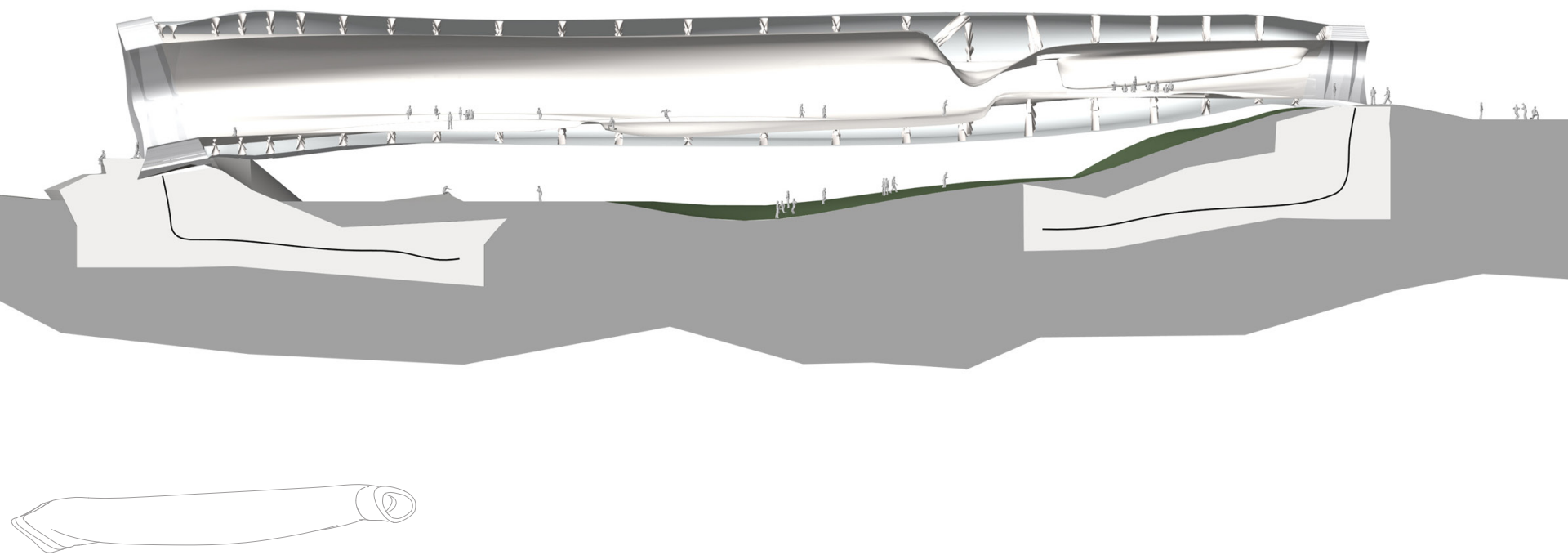


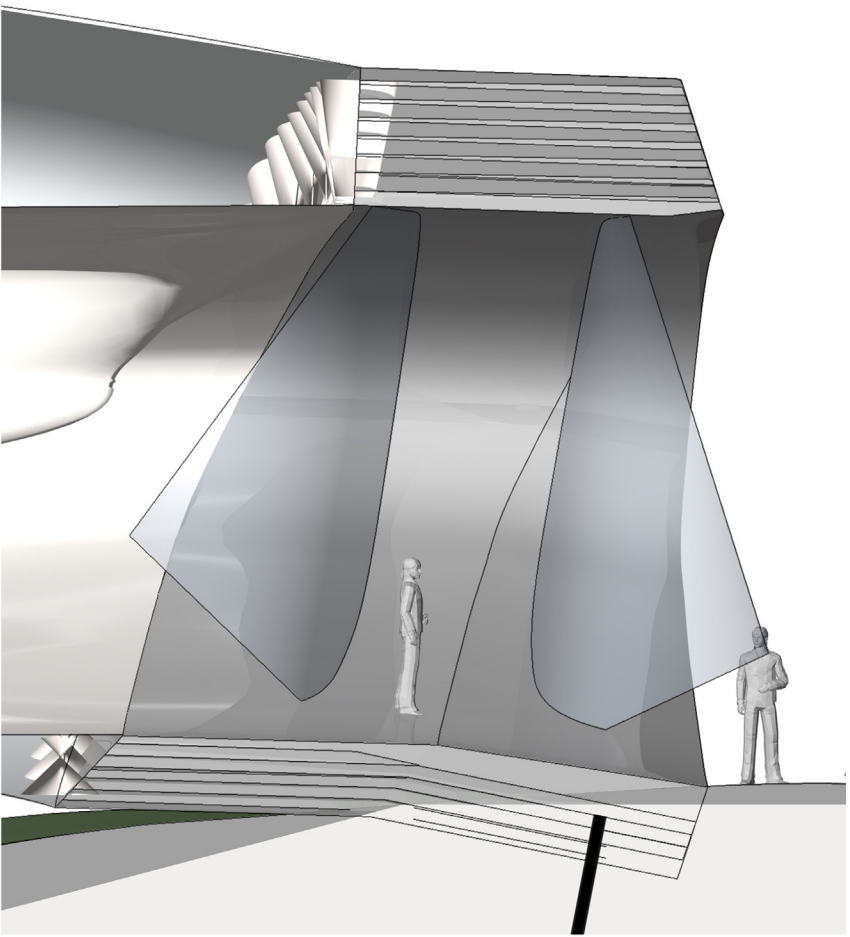


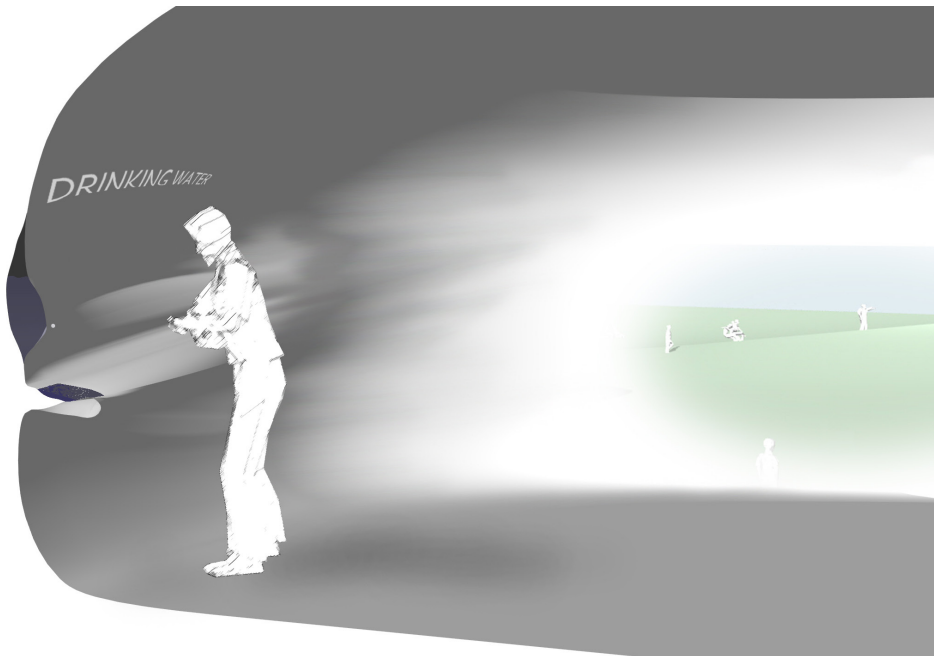


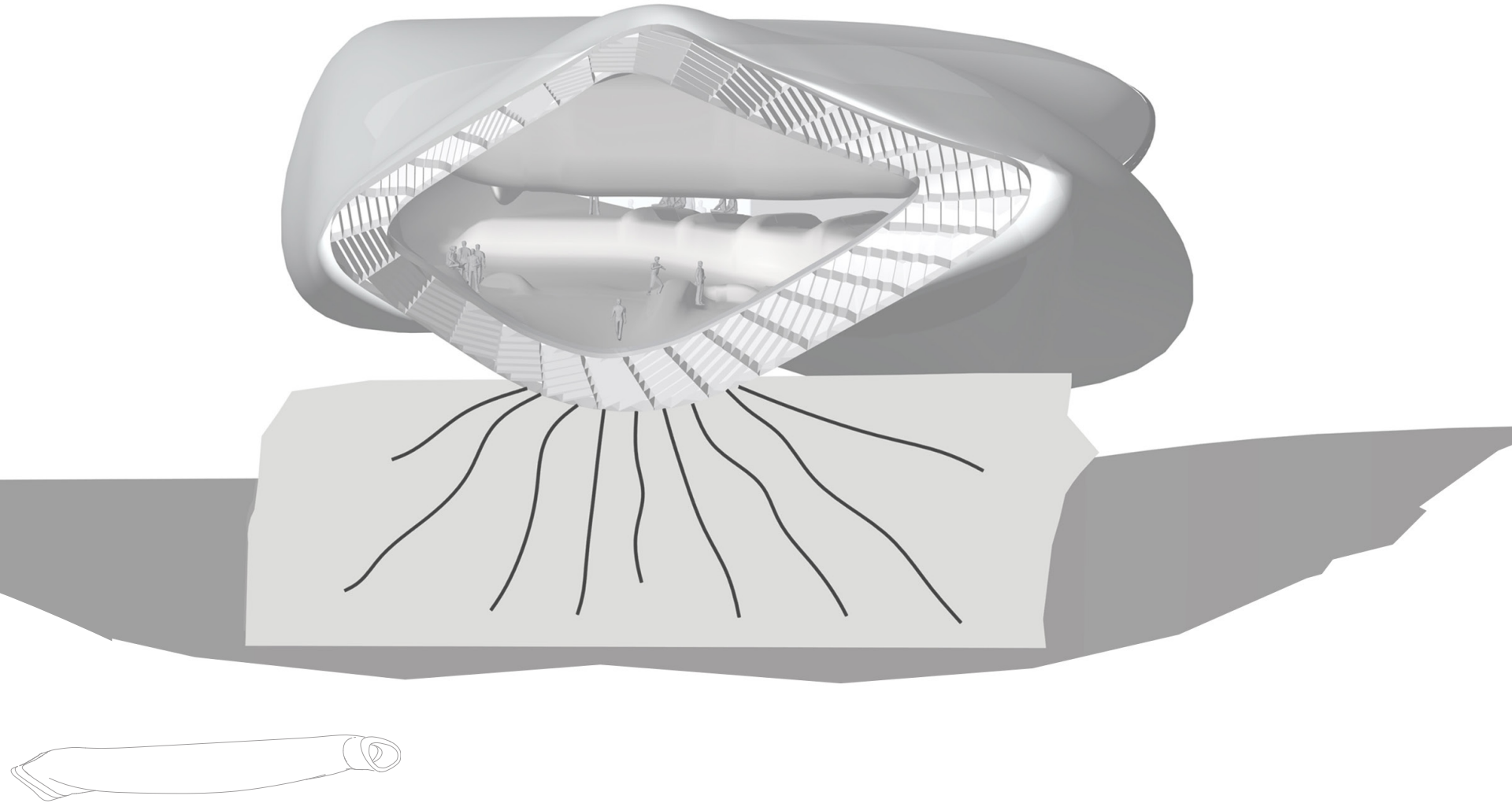


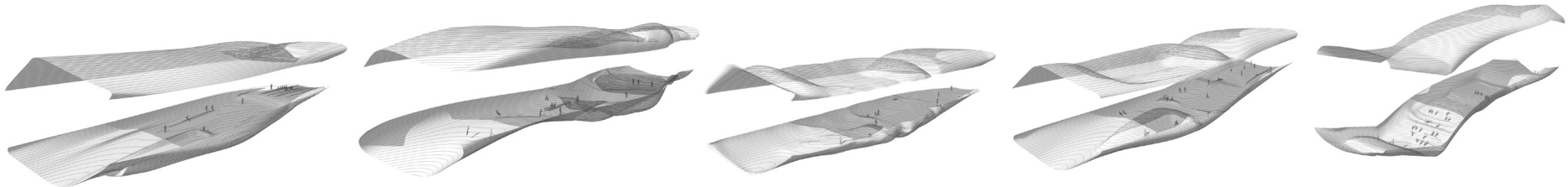

outer skin
muslce graphic embeded in outer skin
muscles bridging connection between skins
innner skin
muscle graphic of embeded muscles in inner skin
foundation

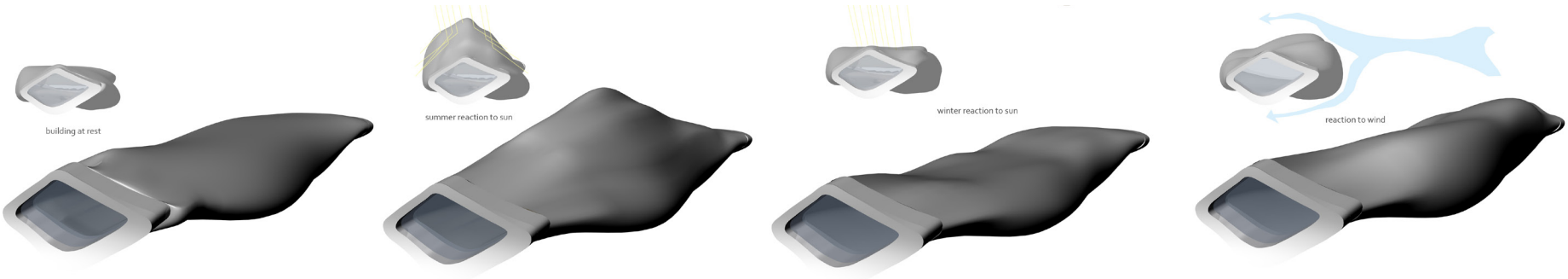


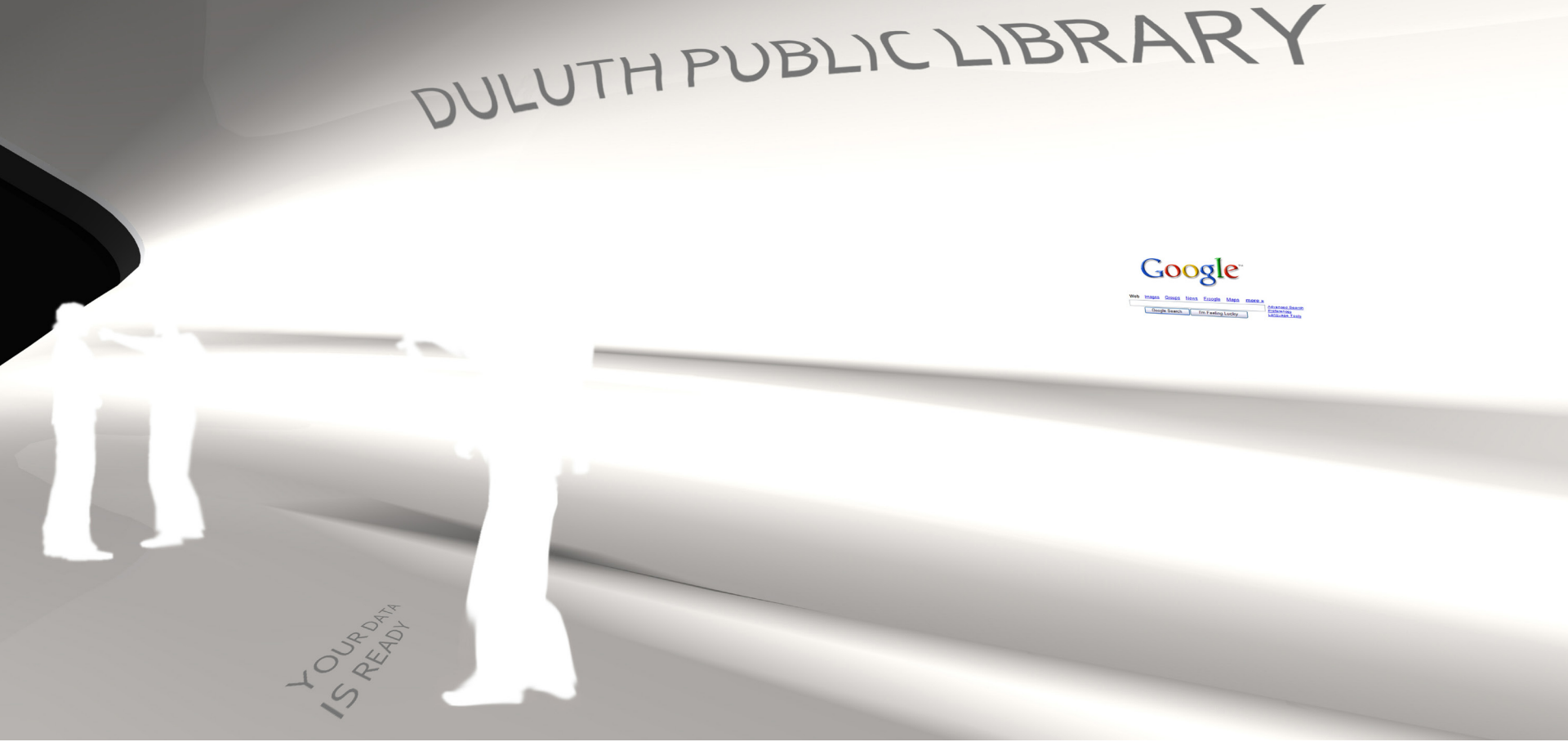



DRINKING WATER






building at rest
summer reaction to sun
winter reaction to sun
reaction to wind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