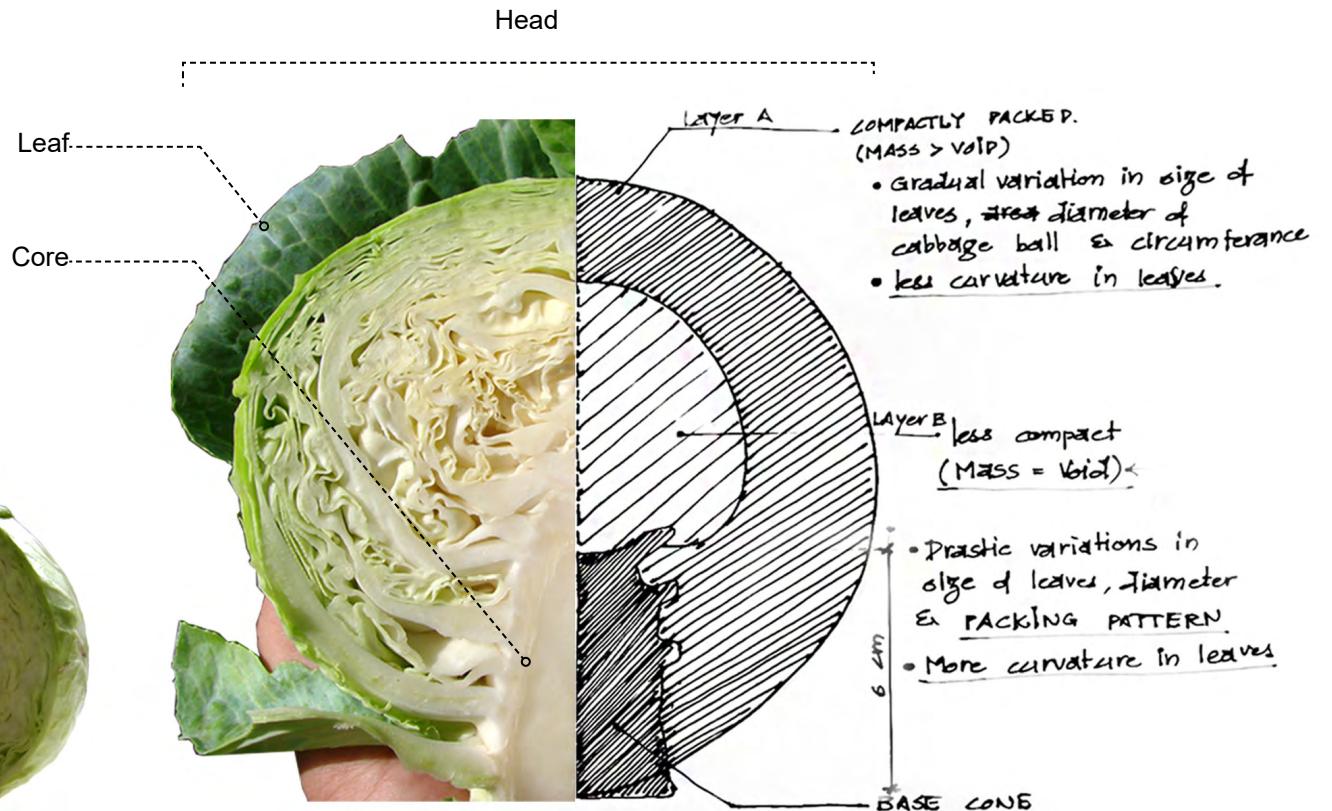


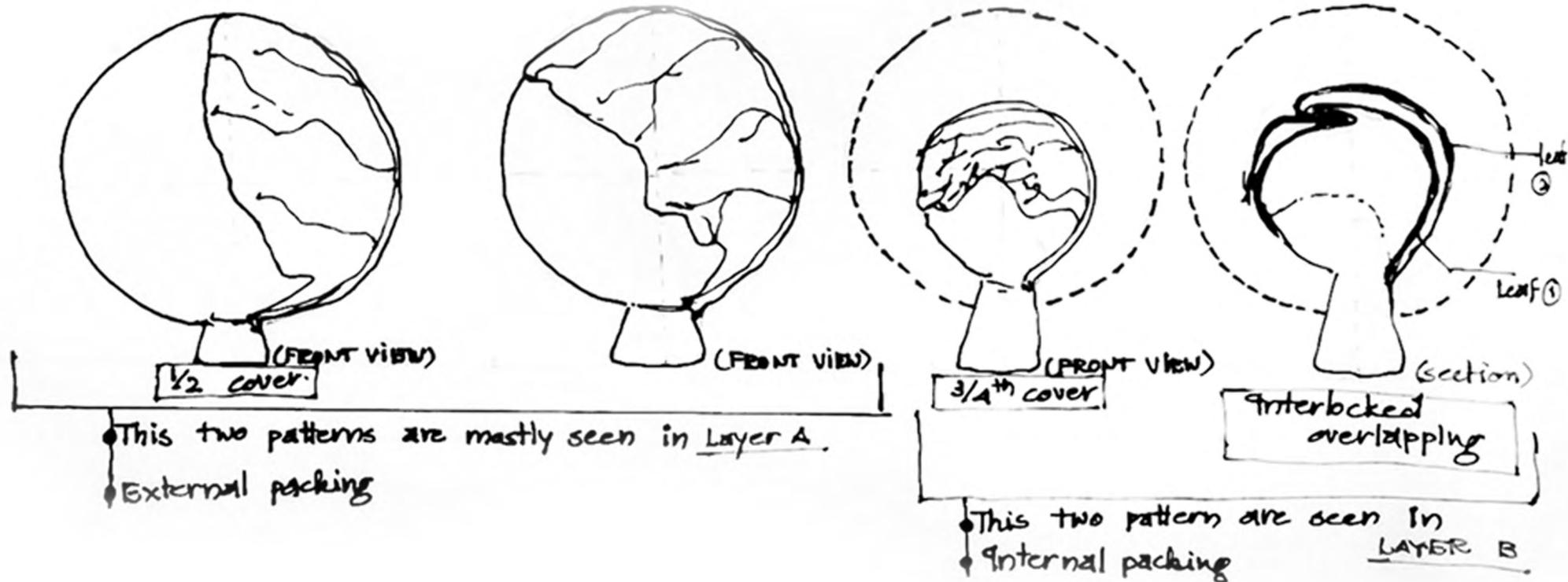
Dissecting cabbage//

Leaves // Have succulent leaves that are free of hairs and covered with a waxy coating, which often gives the leaf surface a gray-green or blue-green color.

Form // Loose or open foliage with folded leaves packed into compact heads

Stem // much expanded to a bulbous structure





Core Geometry//

"Simple shapes are inhuman. They fail to resonate with the way nature organizes itself or with the way human perception sees the world."

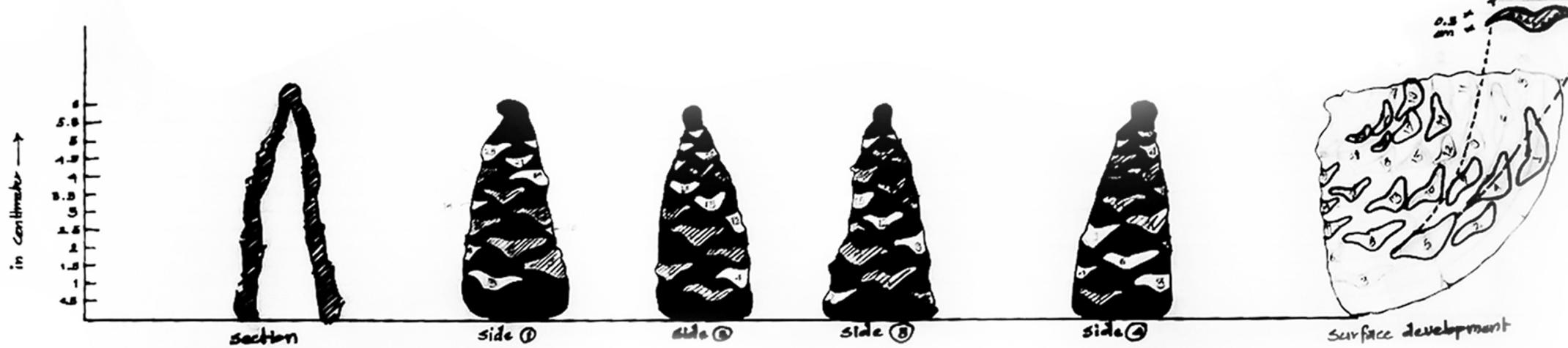
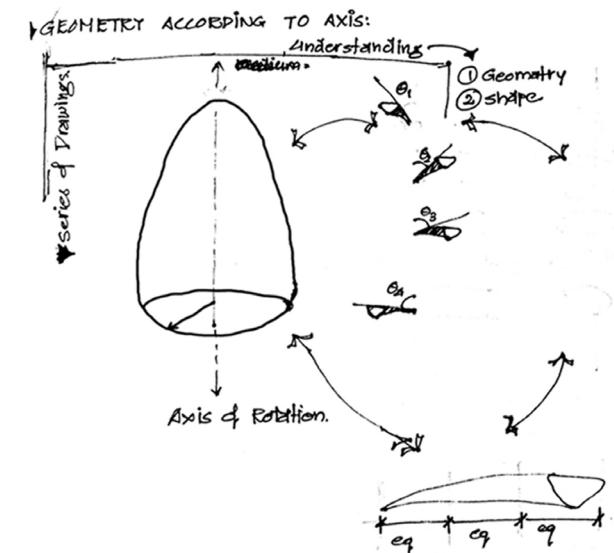
- James Gleick, Historian of Science



How we do it..



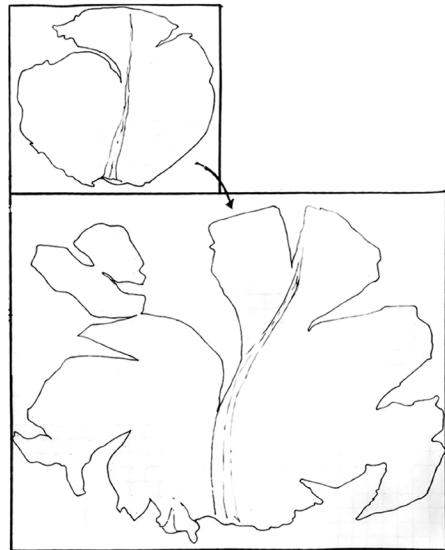
& Nature does it this way.



Leaf folding patterns & spatial relationship//

Layers of cabbage leaves are removed one by one to study sequential change in leaf form, size, shape and folding - unfolding patterns. Surface area and elasticity of the leaf is observed and measured.

To simplify the study, average size between 5 consecutive leaves are selected to understand girth-surface relationship



Area of flatten leaf = 413 cm^2
Area of curved leaf = 116 cm^2

When curved leaf is pressed, it tear ups to provide hints of
• Surface development
• Materials mutual behavior of being plastic or elastic according to situation.

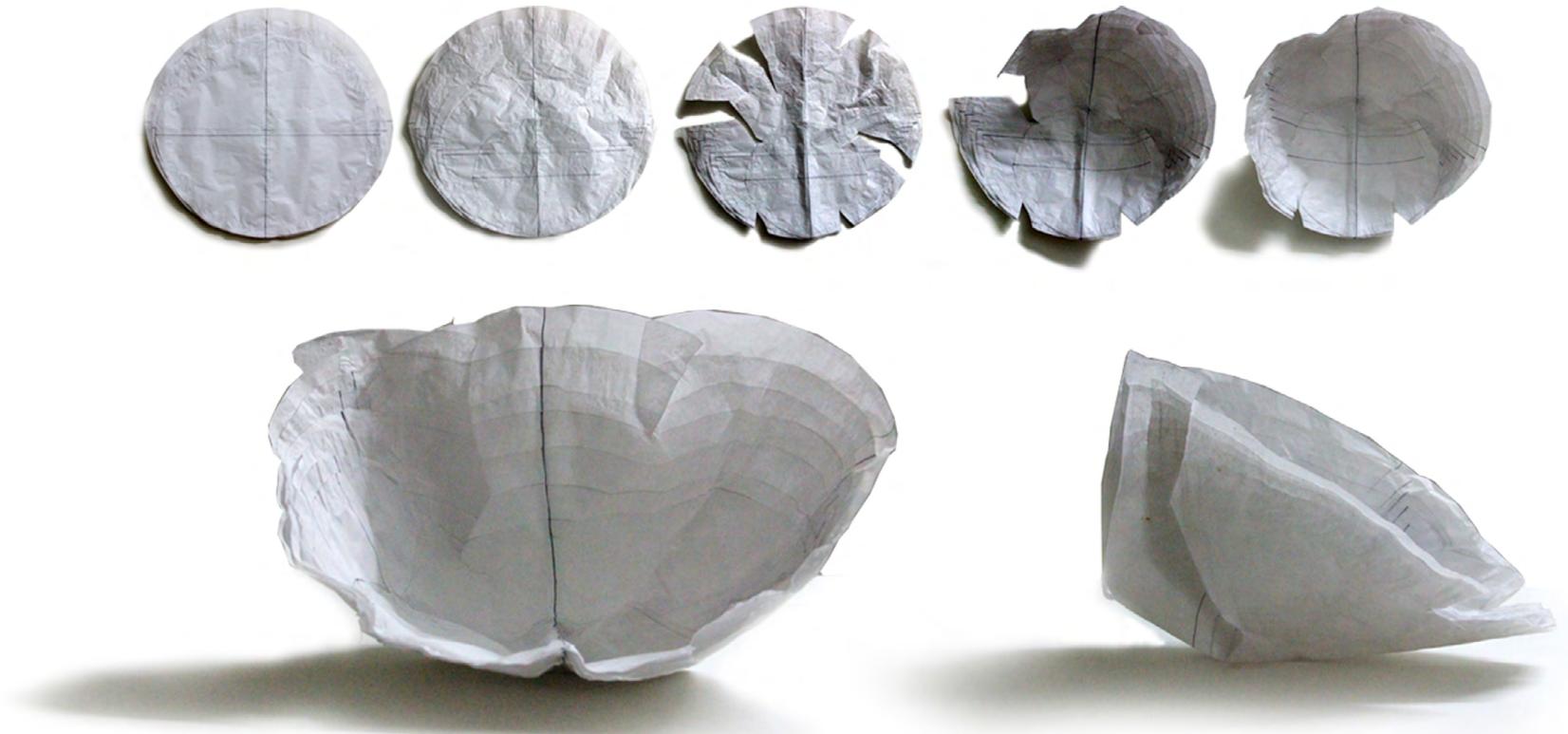


Process models//

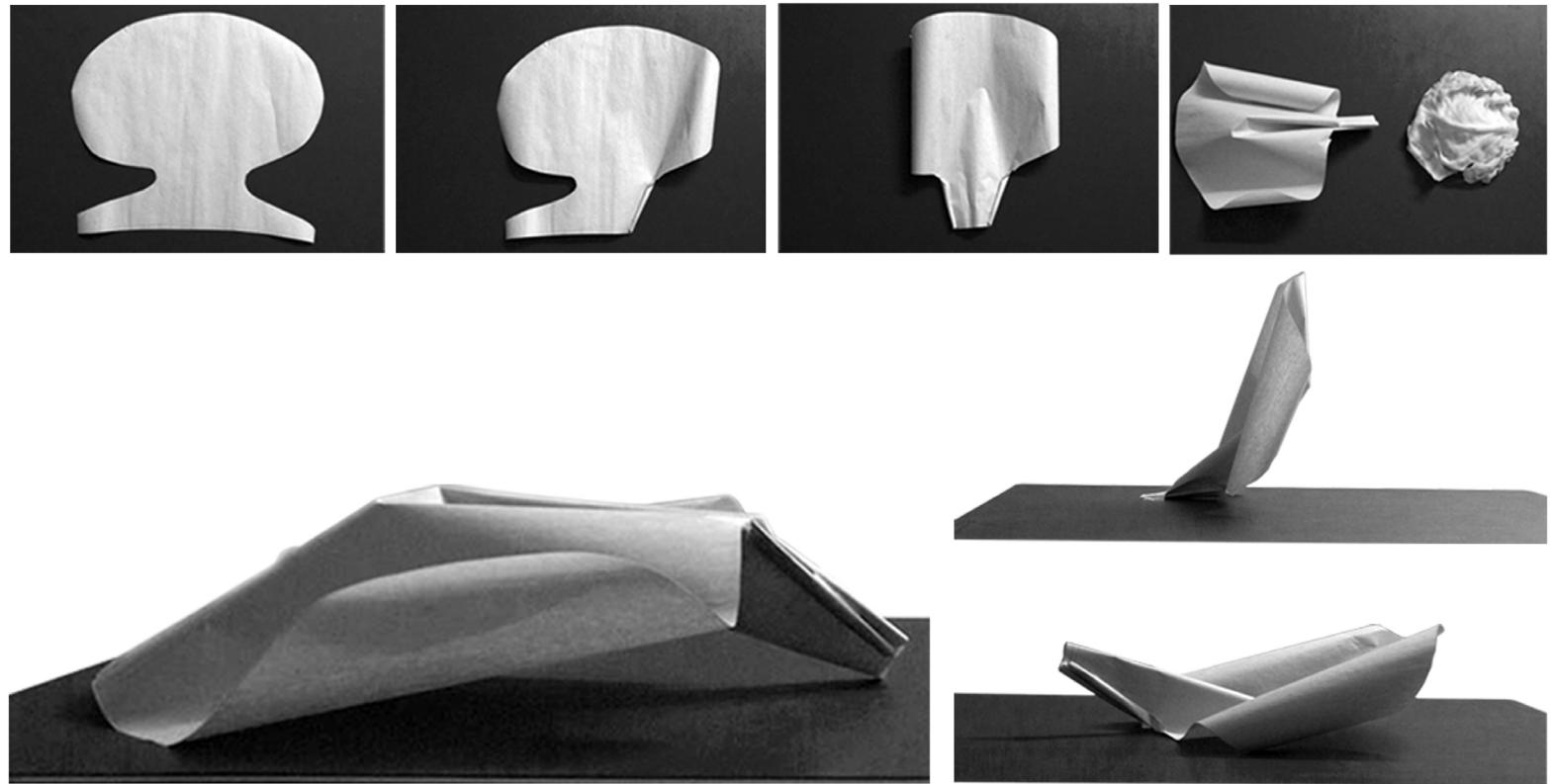
This study explores different materials to take up various geometrical forms. The process enabled deeper understanding how different materials respond to different folding patterns and fabrication techniques.

An overall observation through paper model is that a thin material - like paper can stand on its own and carry weight when folds are imitated as per the leaf geometry study.

Process description // Butter paper were cut in elliptical shapes with decreasing diameter and ten layers were stuck over one another to mimic cabbage leaf thickness and bending property. As a result, strengthened core can be created across central axis just by adding mass around core.

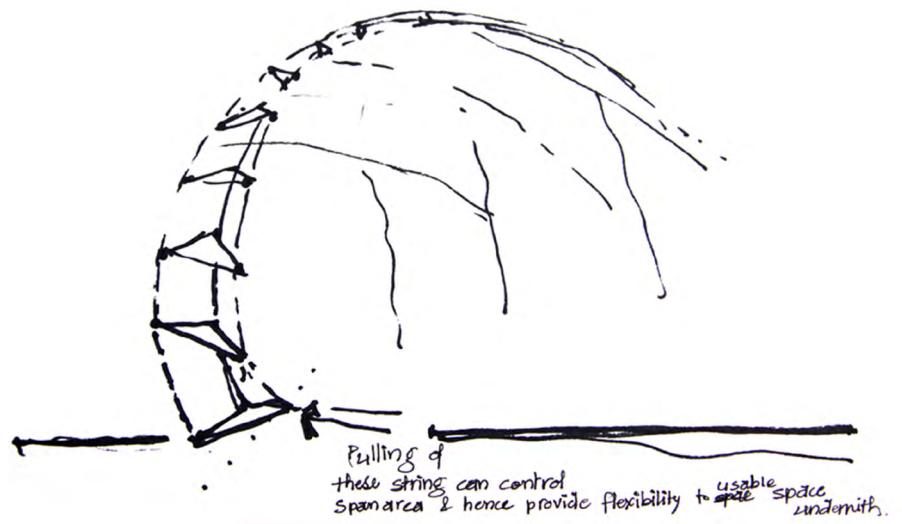


Process model//

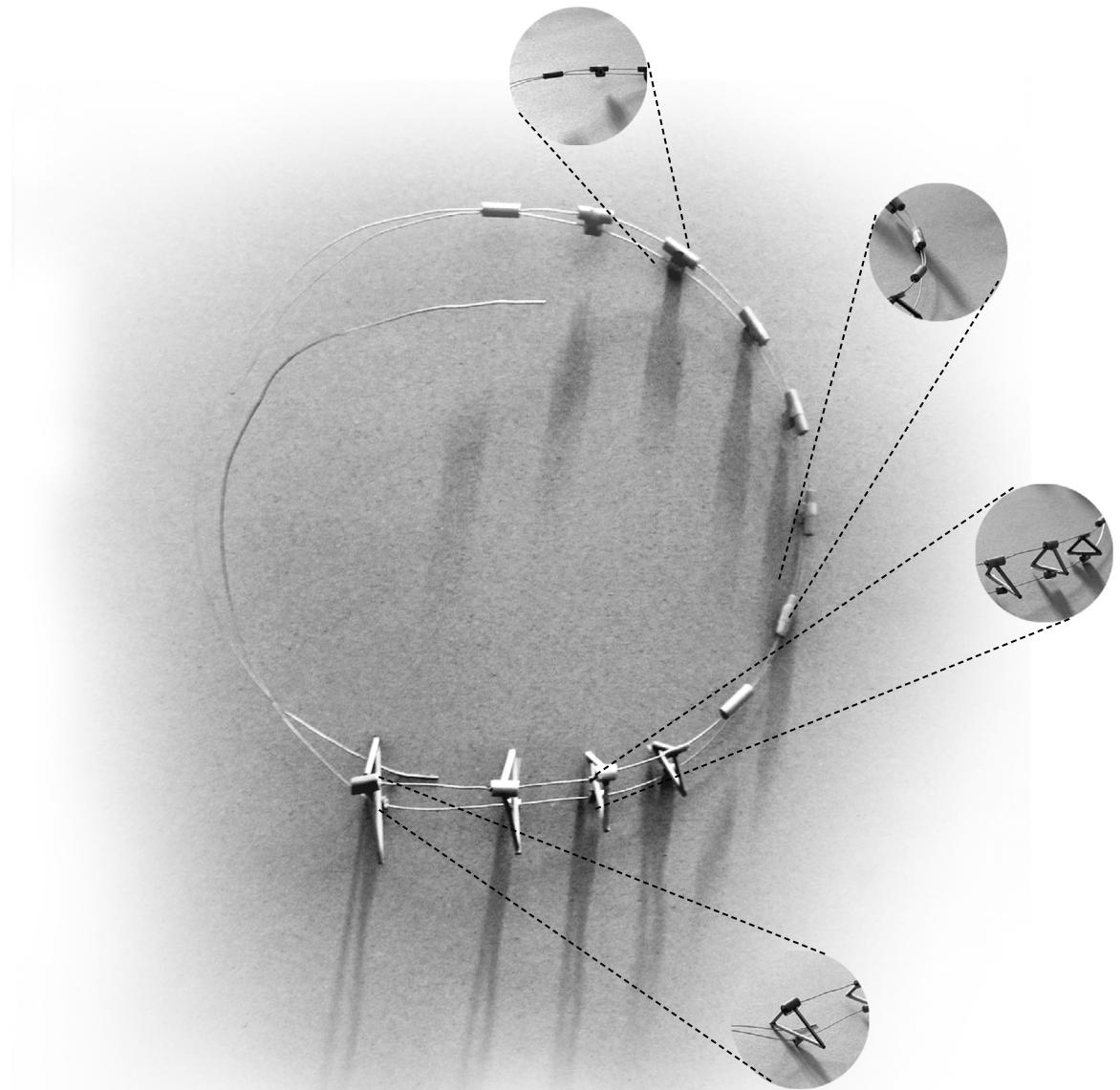


Process description // To explore the strength of curvature based on central axis folding pattern. This particular model is created using Newsprint paper (40 GSM) and it stands on its own. The derived form is very strong, light weight and can span large areas.

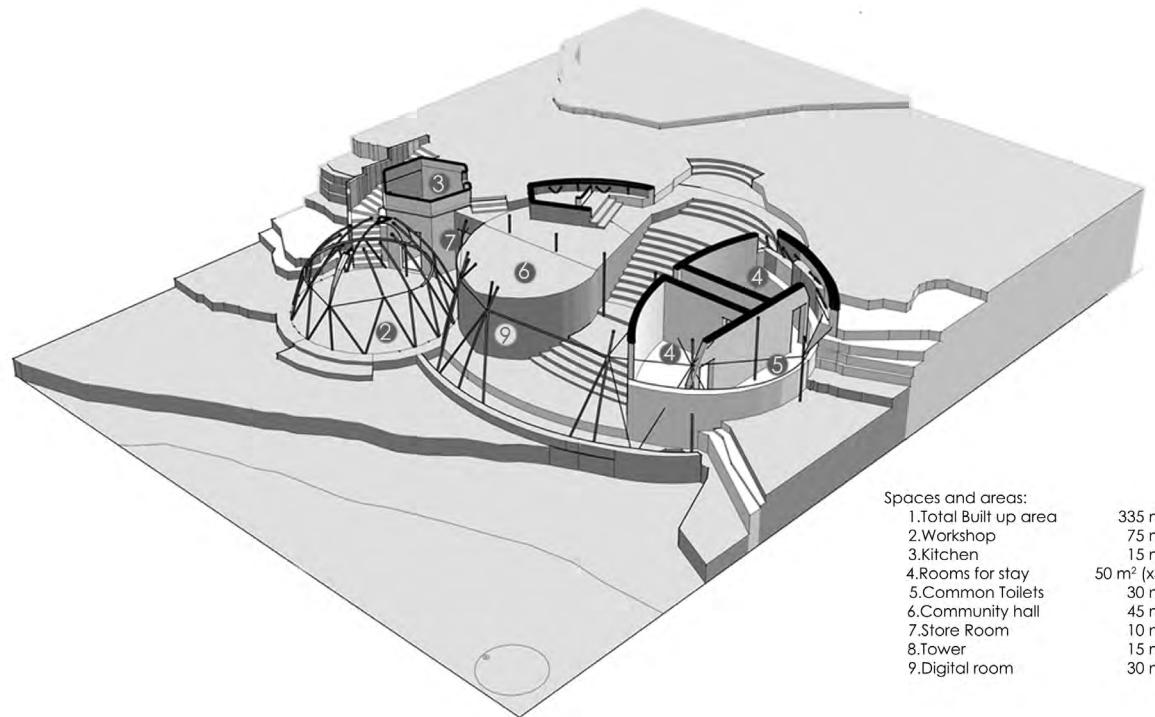
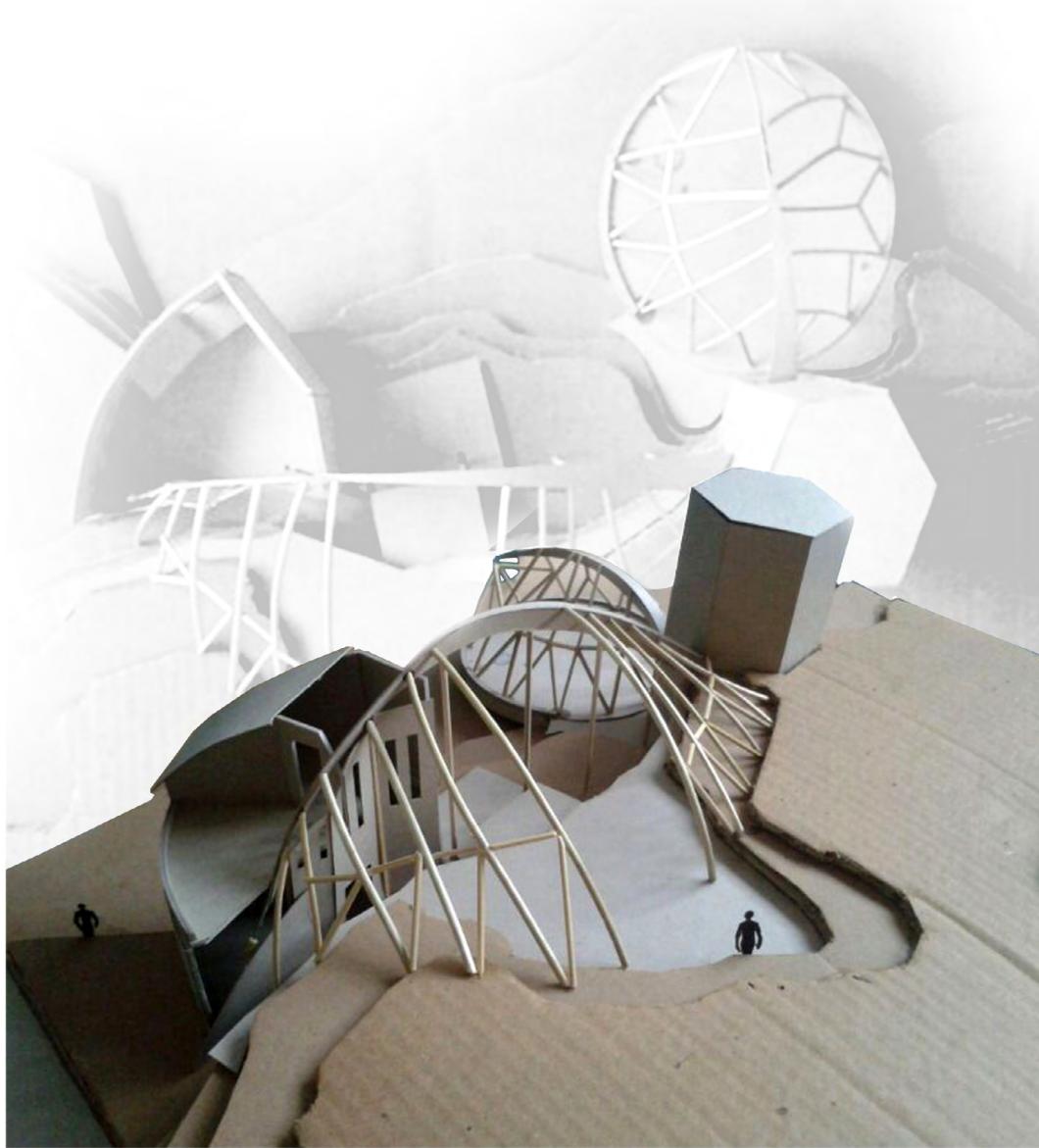
Process model//



Process description // To explore the expansion property of flattened cabbage leaf, wire is used and tied with cane sticks to mimic expansion and contraction. Potentially, this can provide flexible spanning mechanism for semi-outdoor gathering spaces



Design application//



Design application // Based on the understanding of natural object study, spatial expansion system is derived. The system act as a expansible roof element for large scale gathering in a workshop campsite situated at the western ghat of India - overlooking the Arabian sea.

Process model//

