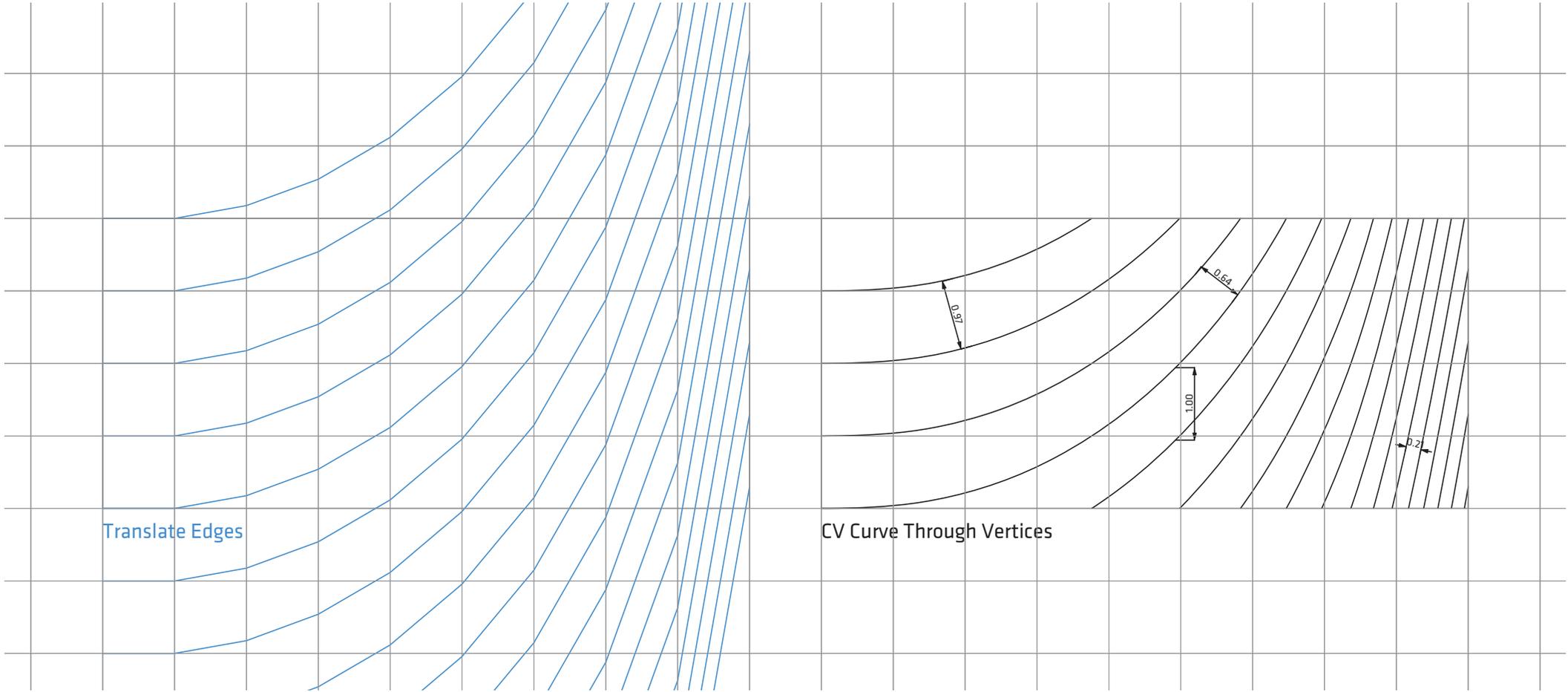


1) Horizontal Edges: The initial louvre bands are constructed from a starting grid of four by four horizontal line segments (edges).

2) Rotate Edges: The horizontal edges are rotated around their centers in ten degrees increments along the X-axis, maintaining their vertical distance of one unit.

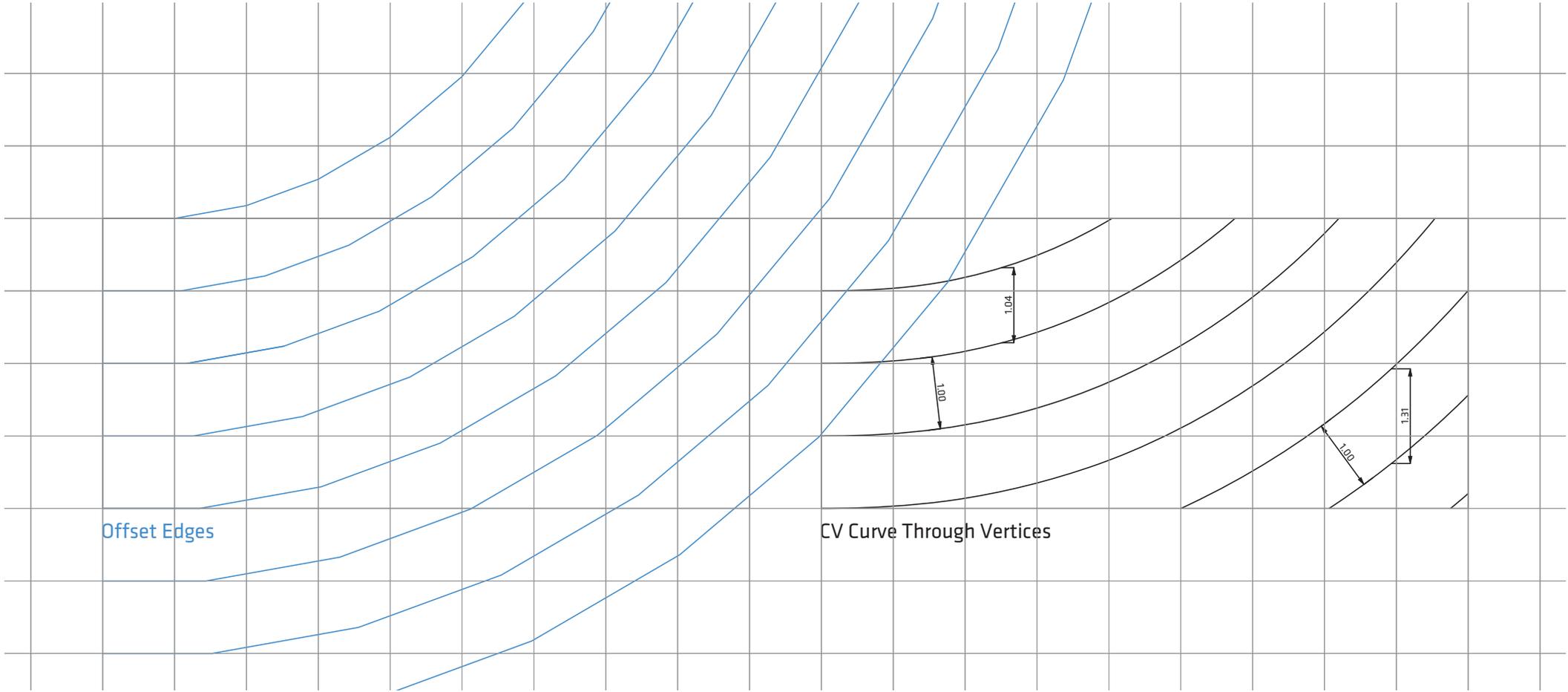
3) Extend Edges: The rotated edges are extended (i.e. made longer) such to have a horizontal length of one unit.

4) Translate Edges: The extended edges are translated (i.e moved) vertically such to connect end to end and again form running louvre bands.



Translate Edges

CV Curve Through Vertices

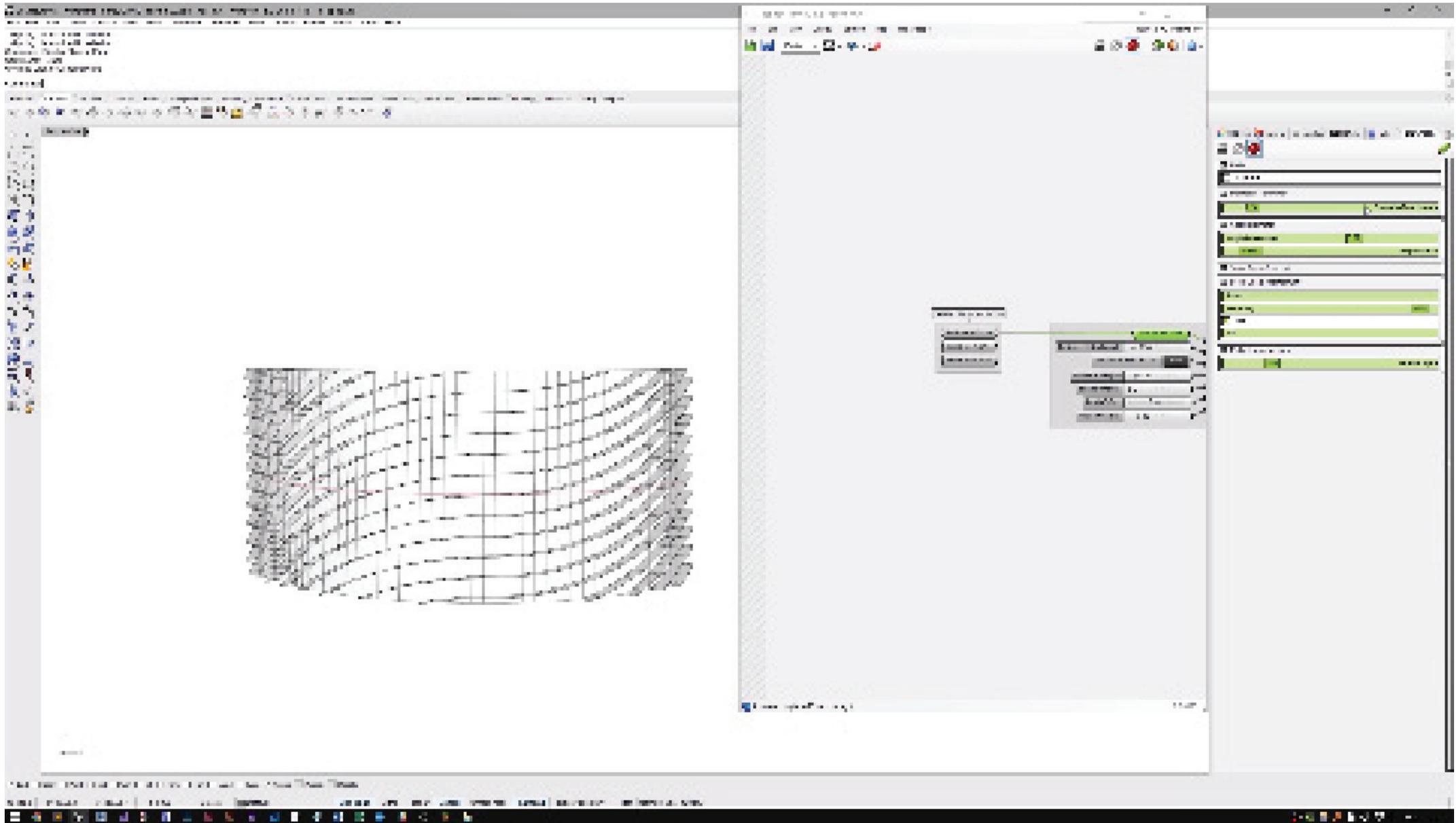


Offset Edges

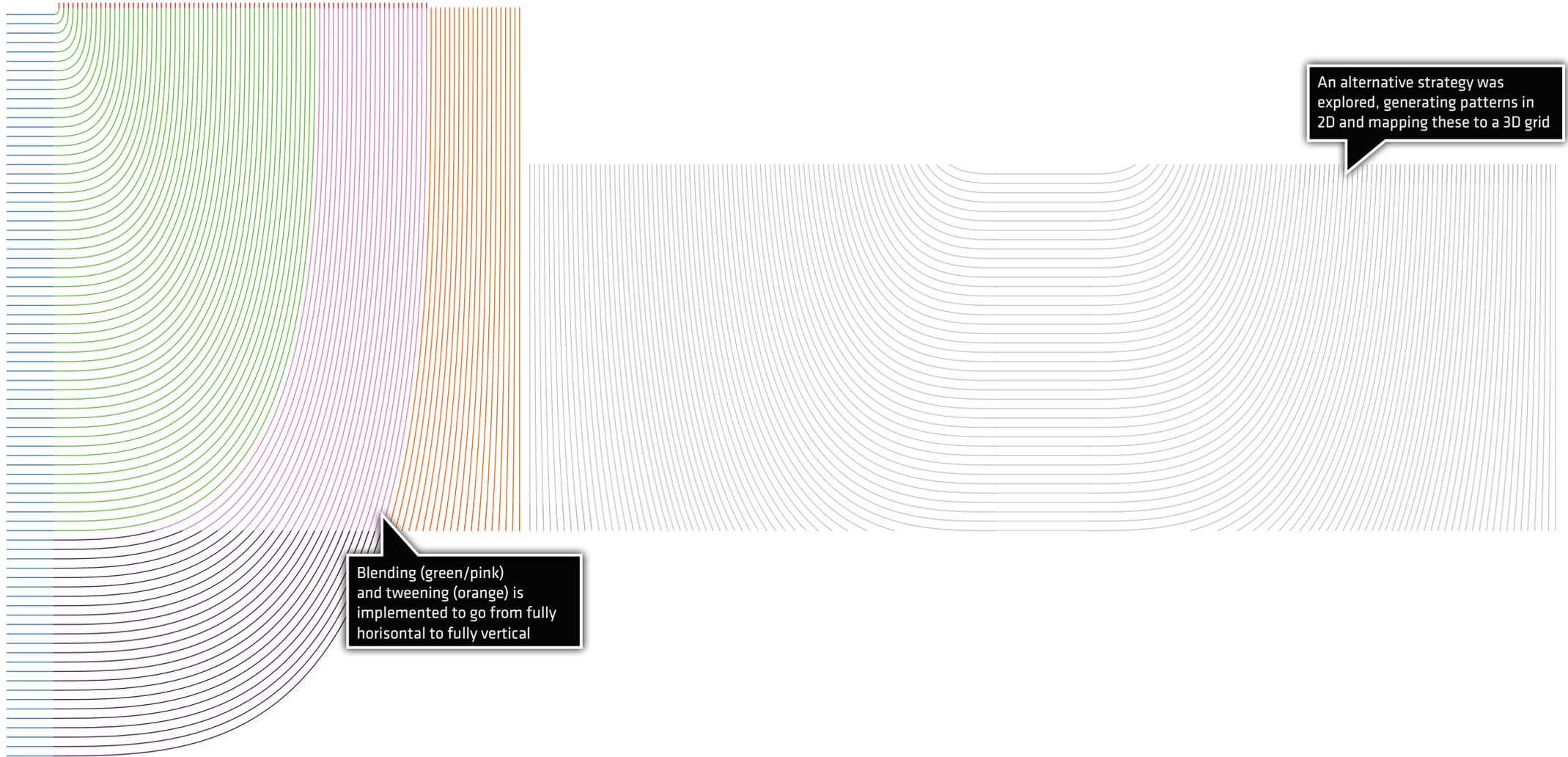
CV Curve Through Vertices

SOT

Design Constraints Exploration in 3D Using Dynamic Solver (Video 01:09)

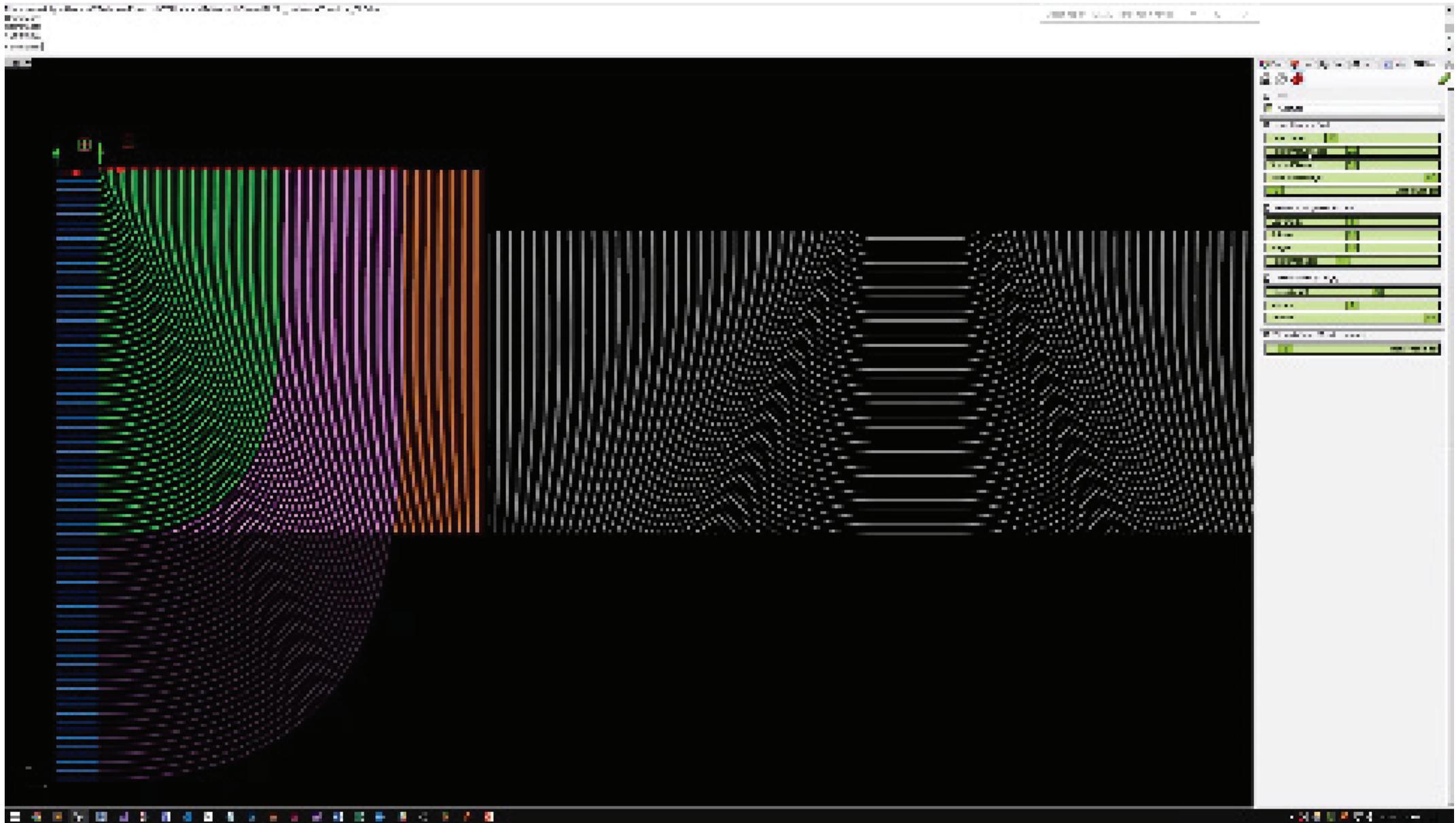


[Video Link](#)

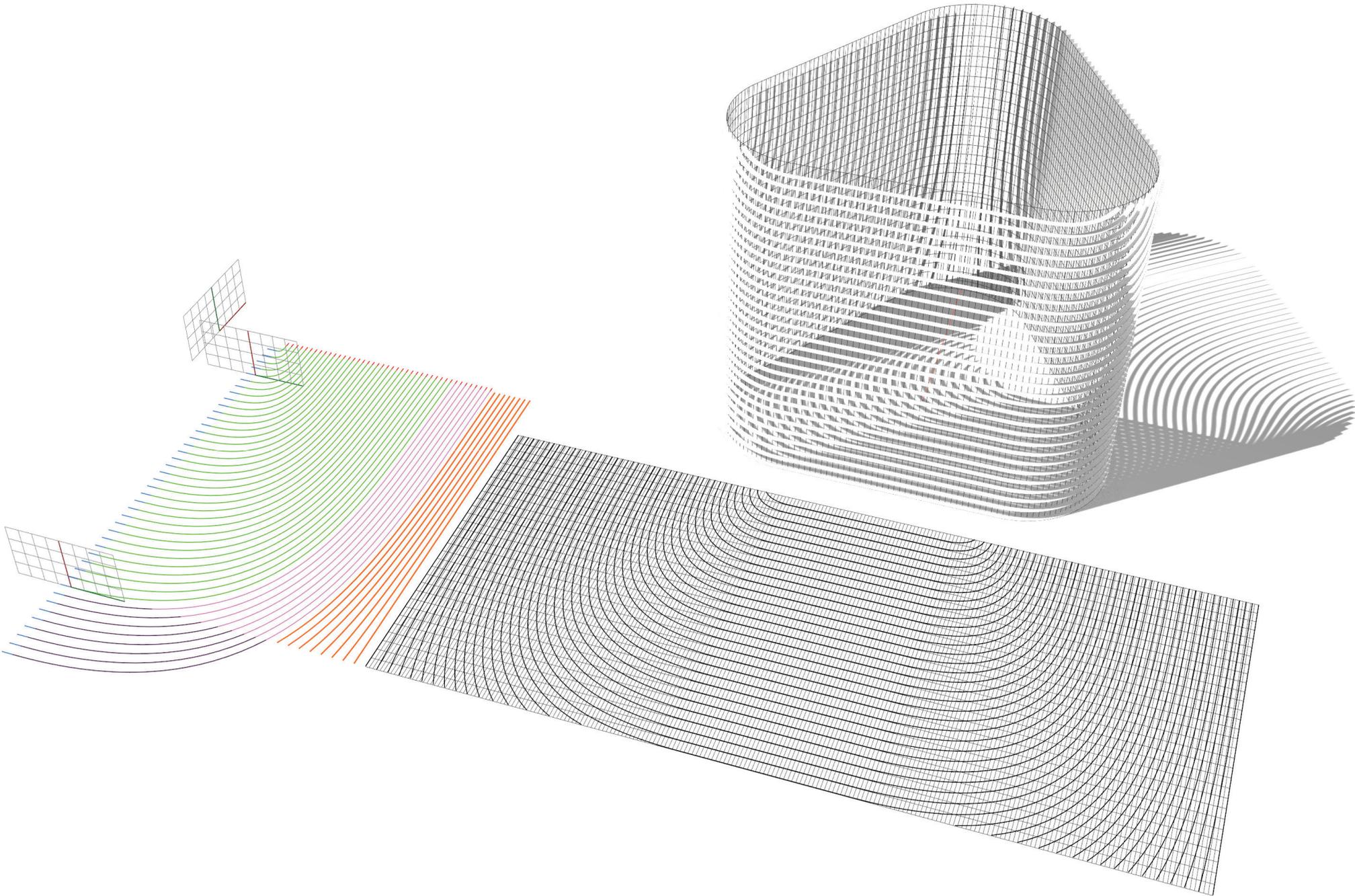


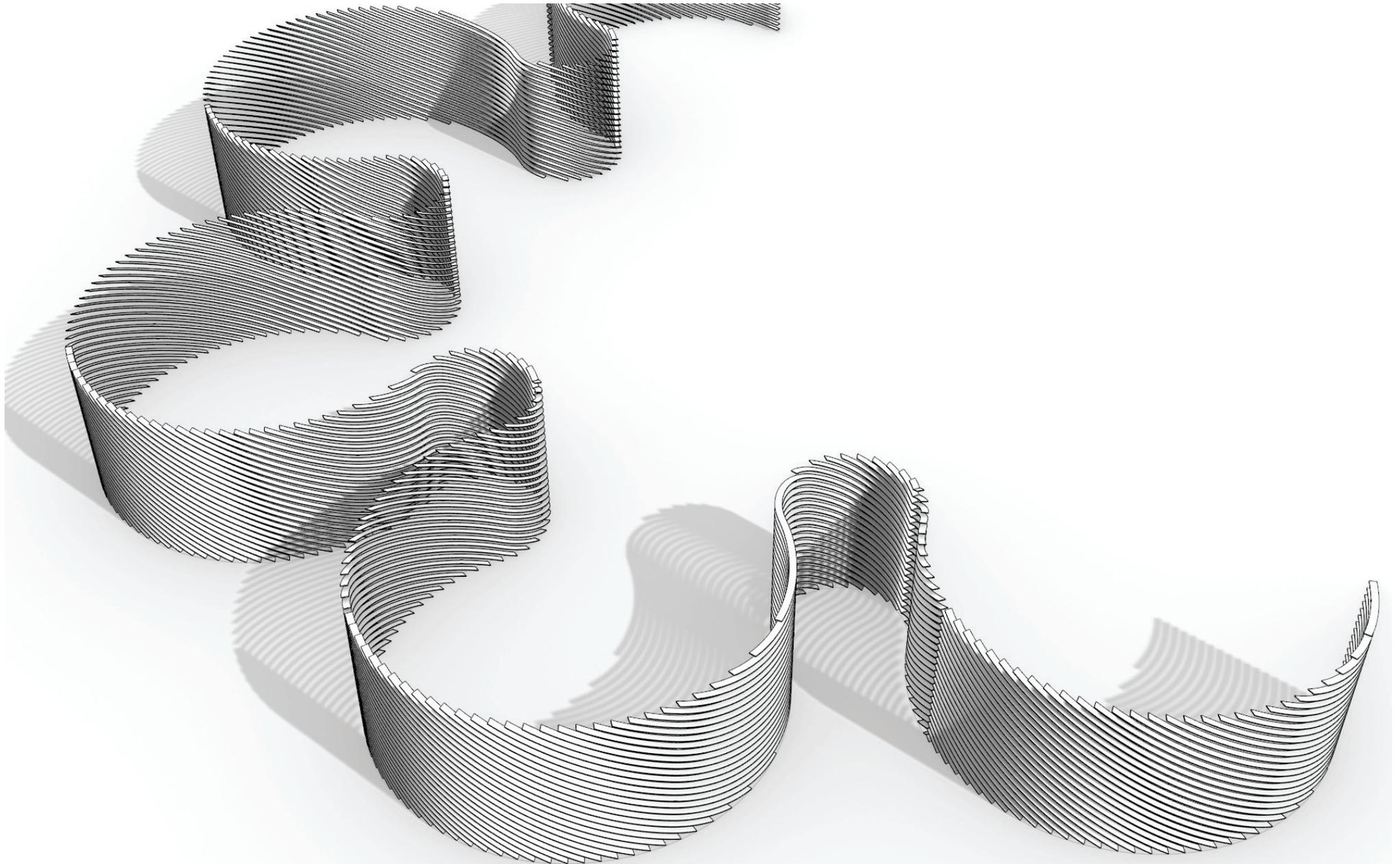
SOT

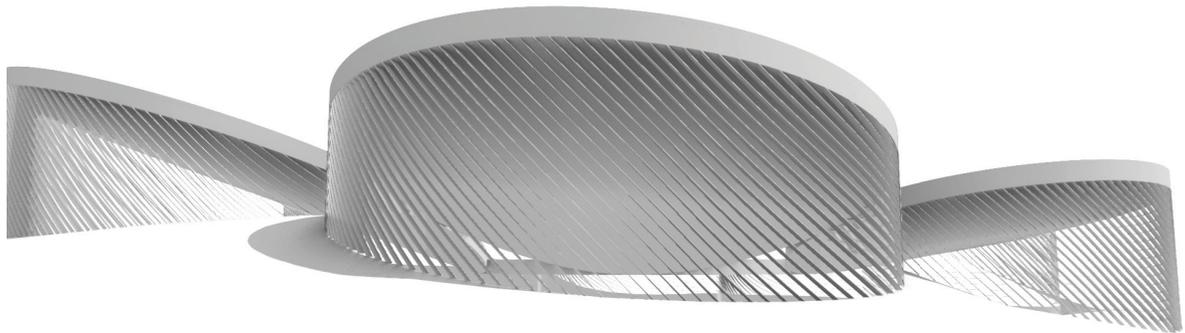
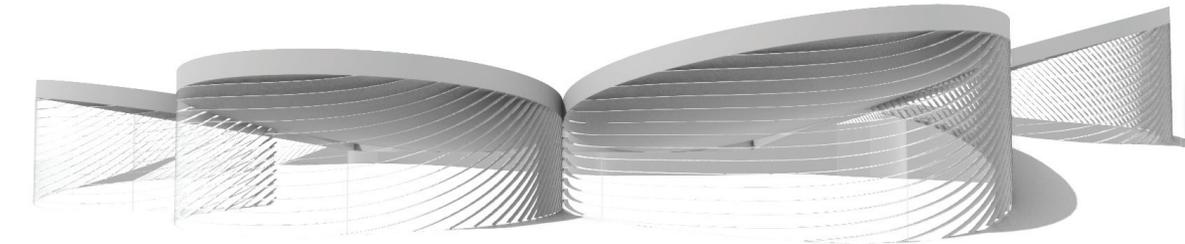
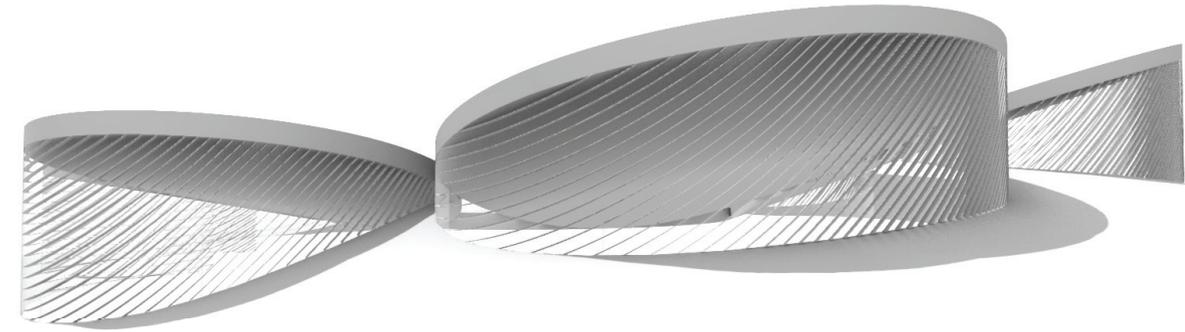
Horizontal To Vertical Pattern Generation With 2D To 3D Mapping (Video 00:55)



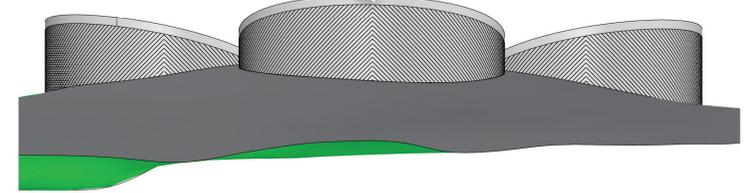
[Video Link](#)



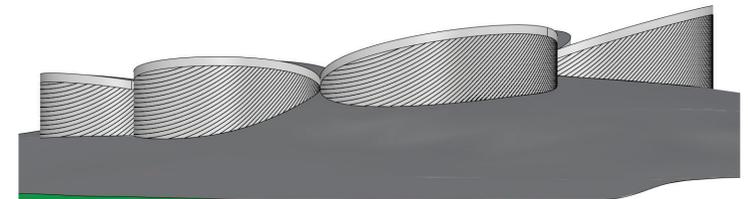
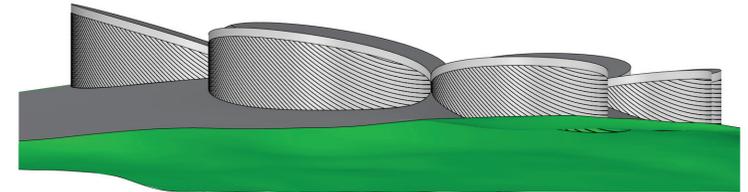
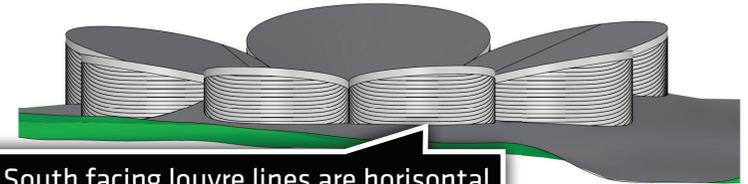




North facing louvre lines are clipped to be max 45 degrees



South facing louvre lines are horizontal



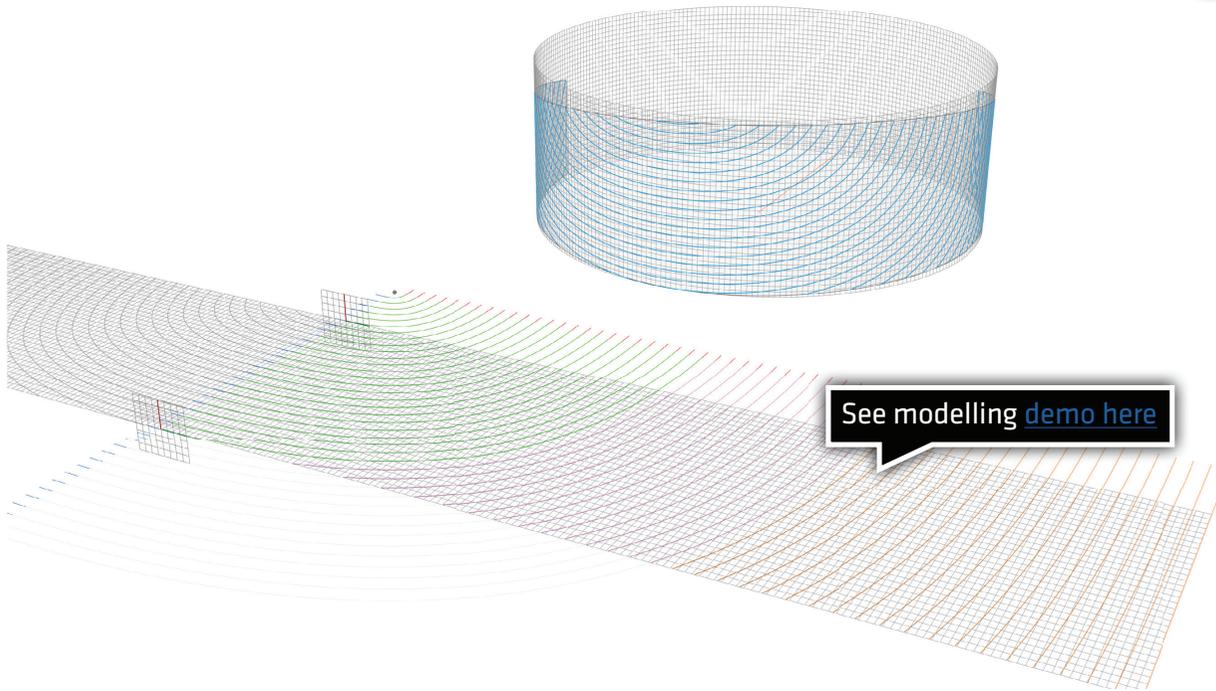
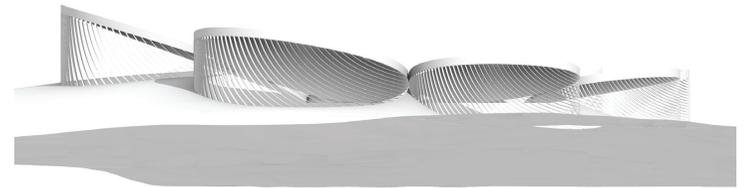
We have further developed and implemented the "Orient To Optimal Angle" logic version of the finger print facade concept.



North facing louvre lines are vertical



South facing louvre lines are horizontal

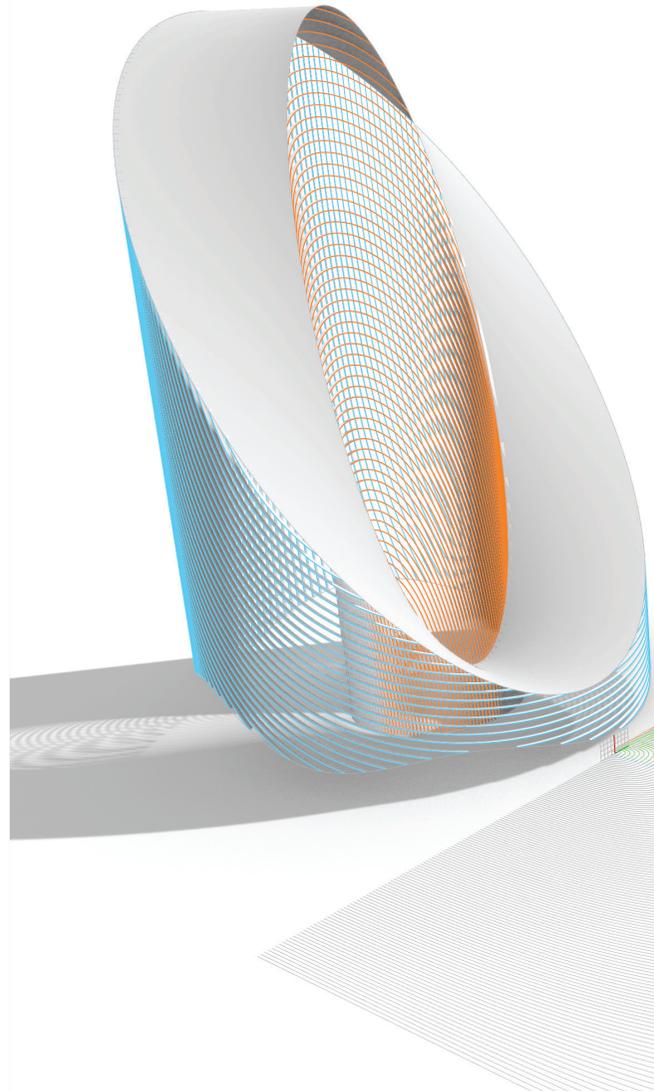


See modelling [demo here](#)

We have further developed and implemented the “Full Horizontal To Vertical” logic version of the finger print facade concept.



Enter to start (Duration=0 Speed=11 Revolutions=0): Speed
 Speed <11>: 15
 Enter to start (Duration=0 Speed=15 Revolutions=0)
 Command: _Save
 Command: _Save



Grasshopper - 200603_FullHorizontalToVertical_D2

File Edit View Display Solution Help

200603_FullHorizontalToVertical_D2

Generate 2D Louvre Curves Pattern

StartPoint
 LineDistanceX 750.00
 LineDistanceY 1222.30
 LineCount 107
 TrimLineUpper 0
 TrimLineLower 86
 TweenCount 23
 BlendContinuity 1
 BulgeFactorX 0.50
 BulgeFactorY 0.50
 MirrorDistance 0

DebugData
 LouvreCurves2D

Draw Debug Data

Generate 2D Facade Grid and Map Louvre Curves Onto This (heavy due to intersections)

LouvreCurves2D
 Curves2D
 FacadeGrid2D
 GridAxesCount
 GridDimensions
 CurvesGridMap2D
 Tolerance 1.0000

Draw FacadeGrid2D

GridDimensions 2D
 195600
 105117.8
 1.86

Generate 3D Facade Grid

PerimeterCurve
 FacadeHeight
 VerticalGridSize 3000
 HorizontalGridSize 1000
 MoveSeam 0.000
 RotateGrid 0

PerimeterCurve
 FacadeHeight
 VerticalGridSize
 HorizontalGridSize
 MoveSeam
 RotateGrid

GridAxesCount
 FacadeGrid3D
 GridSeamLine
 GridDimensions

Draw FacadeGrid3D

GridDimensions 3D
 354910.52
 177000
 2.01

Draw Face Surface

CurvesGridMap2D
 CurvesGridMap2D
 FacadeGrid3D
 Polyline3D

Grasshopper Python Script Editor

```

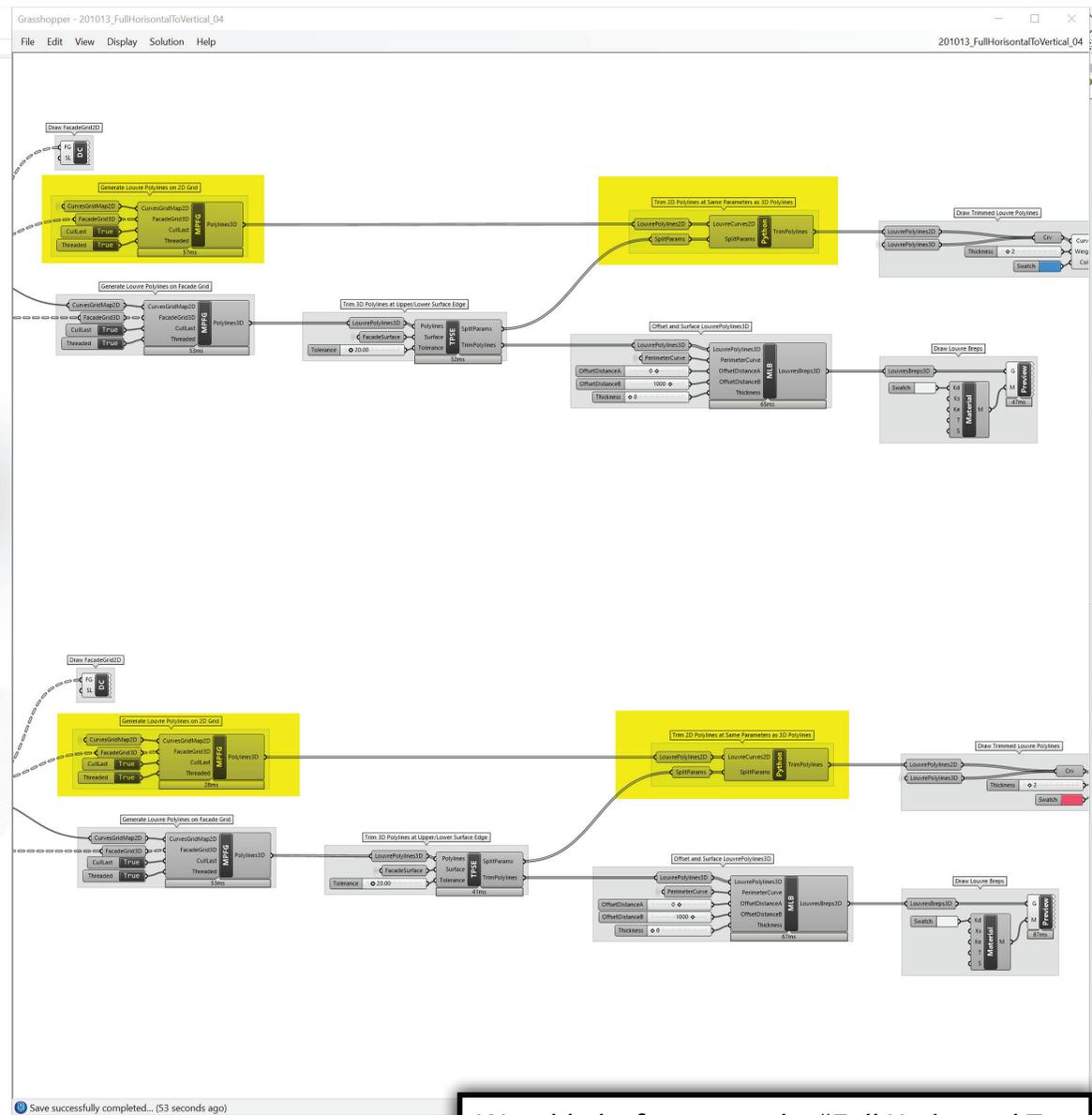
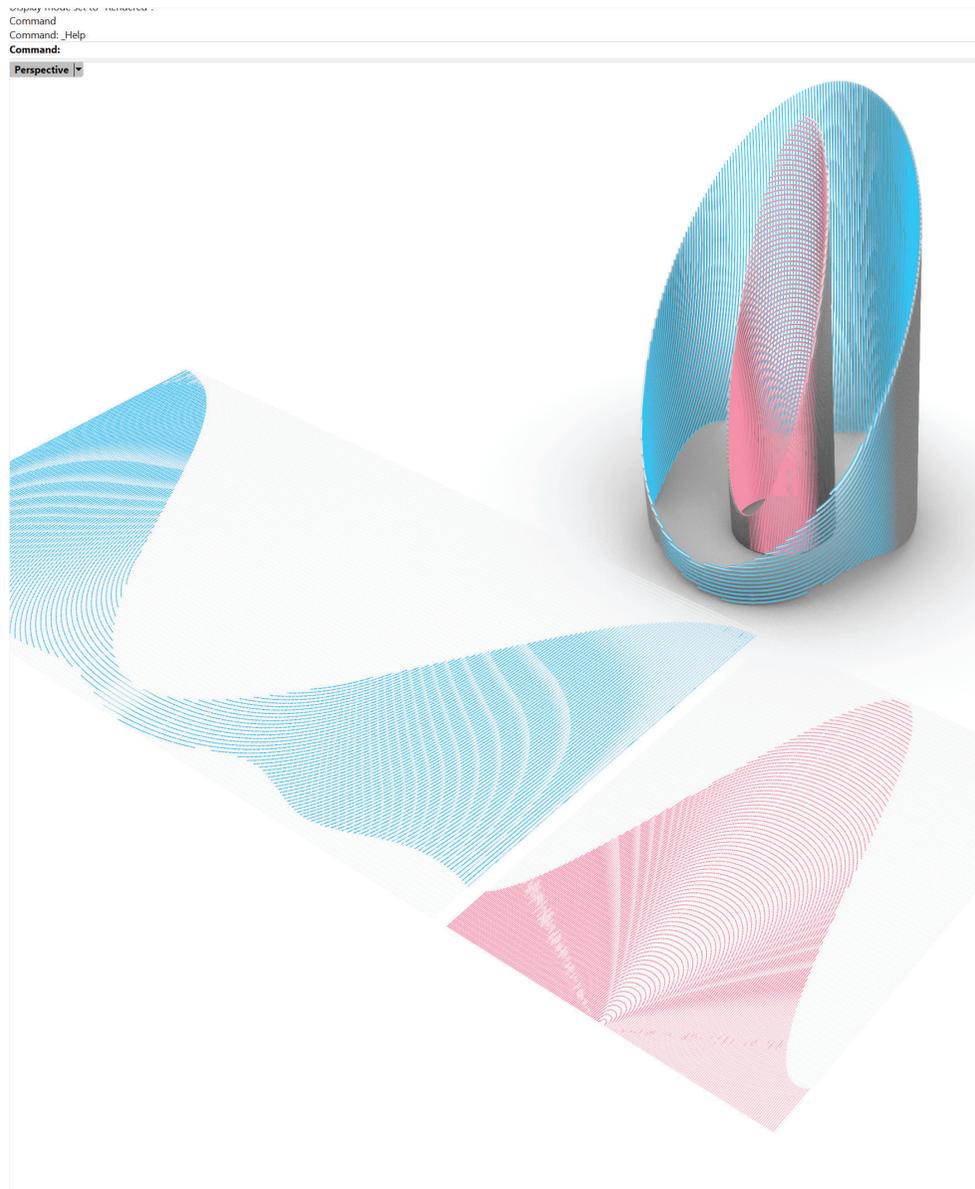
1  Generate Polyline on Facade Grid
2  ---
3  ---Inputs:
4  .....Curves2DGridMap: (item,system.object)
5  .....FacadeGrid3D: (tree,system.object)
6  ---Outputs:
7  .....LouvrePolyline3D:
8  ---Remarks:
9  .....Author: Anders Holden Deleuran (BIG IDEAS)
10 .....Rhino: 6.24.20079.23341
11 .....Version: 200602
12 ---
13
14 import Rhino as rc
15
16 # Unpack gridcurves
17 facadeGrid = [list(br for br in facadeGrid3D.Branches)
18 verticalCurves = facadeGrid[0]
19 horizontalCurves = facadeGrid[1]
20 gridCurves = verticalCurves + horizontalCurves
21
22 # Generate polylines from the gridmappings
23 louvrePolylines = []
24 for lgMap in curvesGridMap2D:
25     ....
26     ....# Get Louvre vertices in the grid
27     ....lvts = []
28     ....for lgNode in lgMap:
29     ....vt = gridCurves[lgNode[0]].PointAt(lgNode[1])
30     ....if vt not in lvts:
31     ....    lvts.append(vt)
32     ....# Make polyline
33     ....lp1 = rc.Geometry.Polyline(lvts)
34     ....LouvrePolylines.append(lp1)
35
36 # Output to GH
37 Polyline3D = louvrePolylines
    
```

Output Help

Cycle

Save successfully completed... (100 seconds ago)

We further developed our “Full Horizontal To Vertical” finger print facade modelling pipeline with the OPPOH team.



We added a feature to the "Full Horizontal To Vertical" pipeline that enables one to trim the 2D louvre pattern by the 3D facade geometry.

