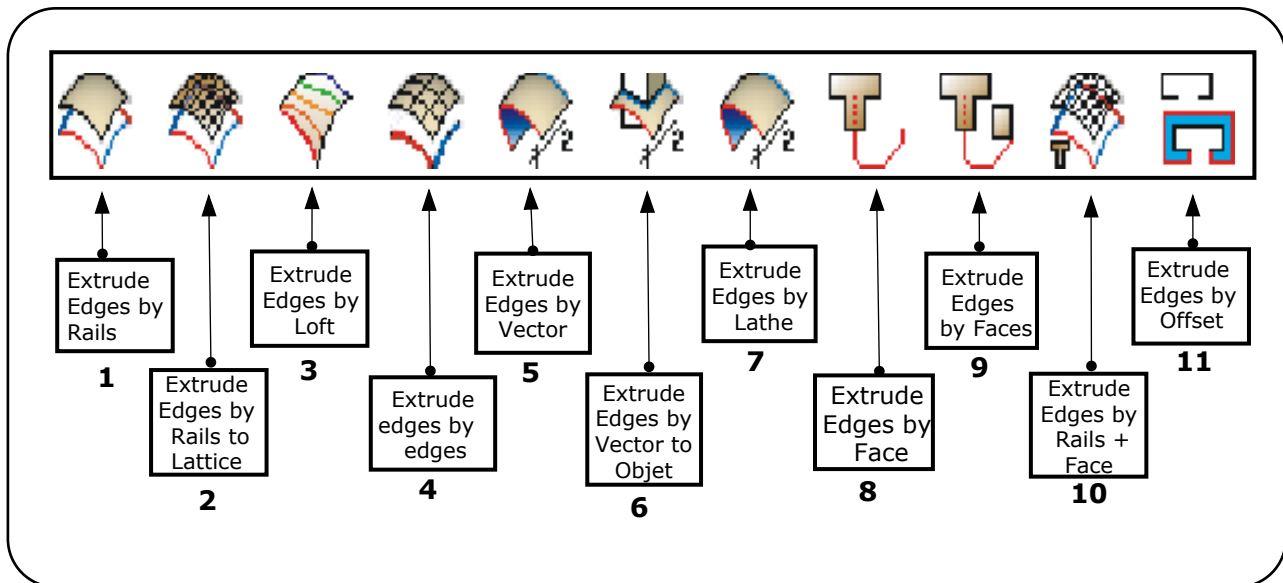


## EXTRUSIONS Of TIG For SKETCHUP (EXTRUDE TOOLS V2.2)

### Tutorial of the essential Plugin of the master TIG



Tuto.V14.eng

1- Extrude Edges by Rails .....	Page 2
2- Extrude Edges by Rails to Lattice.....	Page 3
3- Extrude Edges by Loft .....	Page 5
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5- Extrude Edges by Vector.....	Page 6
6- Extrude Edges by Vector to Object.....	Page 7
7- Extrude Edges by Lathe.....	Page 8
8- Extrude Edges by Face.....	Page 9
9- Extrude Edges by Path.....	Page 10
10- Extrude Edges by Rails + Face.....	Page 11
11- Extrude Edges by Offset.....	Page 12

By Migmat2013

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## EXTRUDE EDGES BY RAILS (1)



**1-** Draw **4 Curves** (distinct). Can be Edges, Splines, Polylines, but it should be continuous (not exploded) - It is good idea to **Weld** the segments separated from the curve (Weld Plugin). **Do Not accept closed curves.**

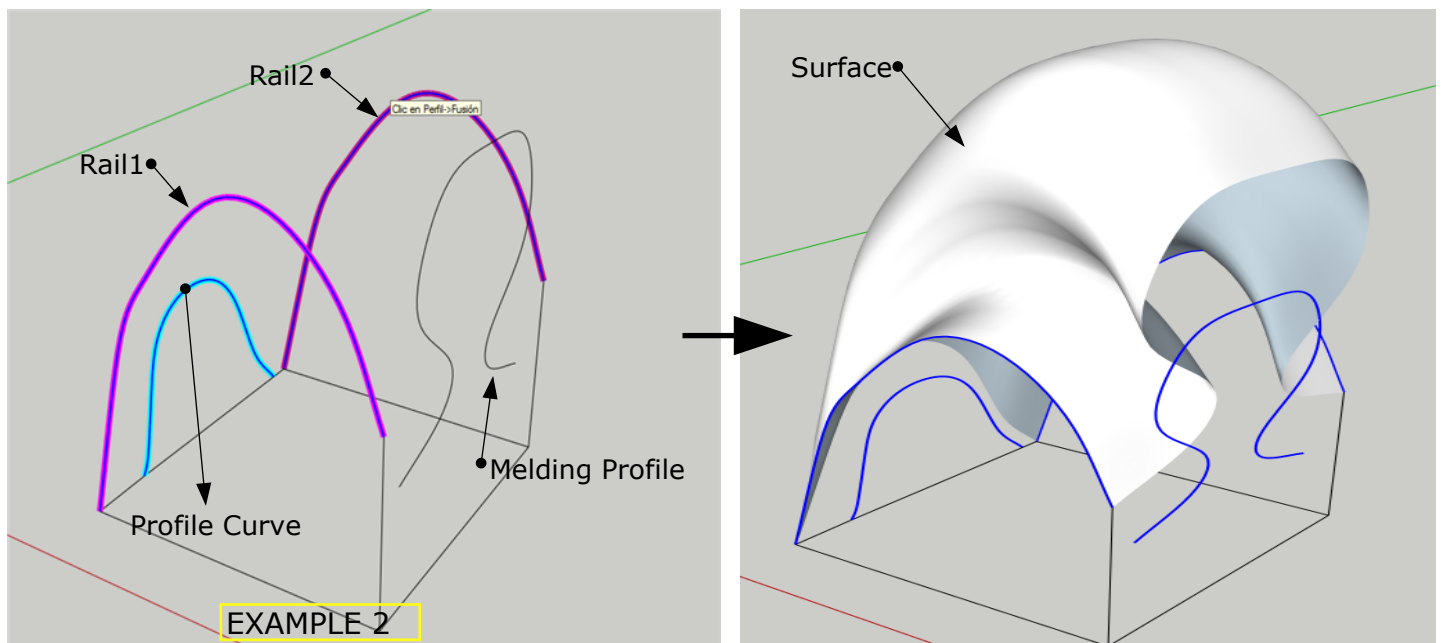
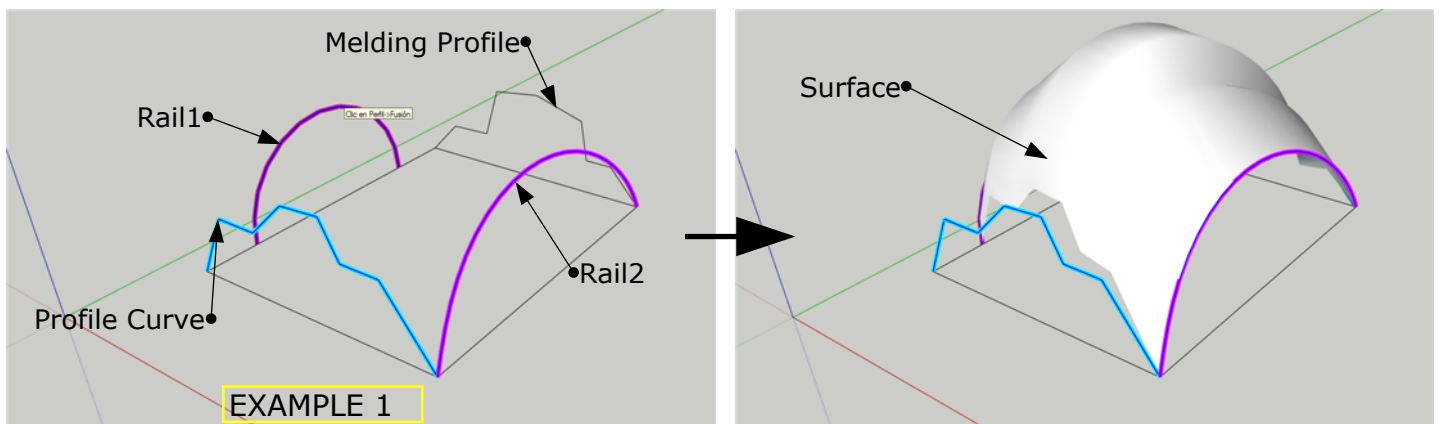
**2-** Select the tool **Extrude Edges By Rails**.

**3-** Select: a) Profile Curve, b) First Rail, c) Second Rail, and d) Molding Profile.

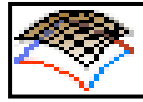
- The Mesh generated can be completely different if you change the order when you pick the curves.

When finish, we can see the surface and ask:

- Reverse Rail-1 Direction?
- Reverse Faces?
- Erase Coplanar Edges?
- Intersect the Mesh with Itself?
- Smooth Edges?
- Erase Original Curves?



## EXTRUDE EDGES BY RAILS TO LATTICE (2)



**1-** Draw **4 Curves** (distinct). Can be Edges, Splines, Polylines, but should be continuous (not exploded) - Is good idea to **Weld** the segments separated from the curve (Weld Plugin). **Do Not accept closed curves.**

**2-** Select the tool **Extrude Edges by Rails to Lattice.**

**3-** Select: a) **Profile Curve**, b) **First Rail**, c) **Second Rail**, and d) **Melding Profile**.

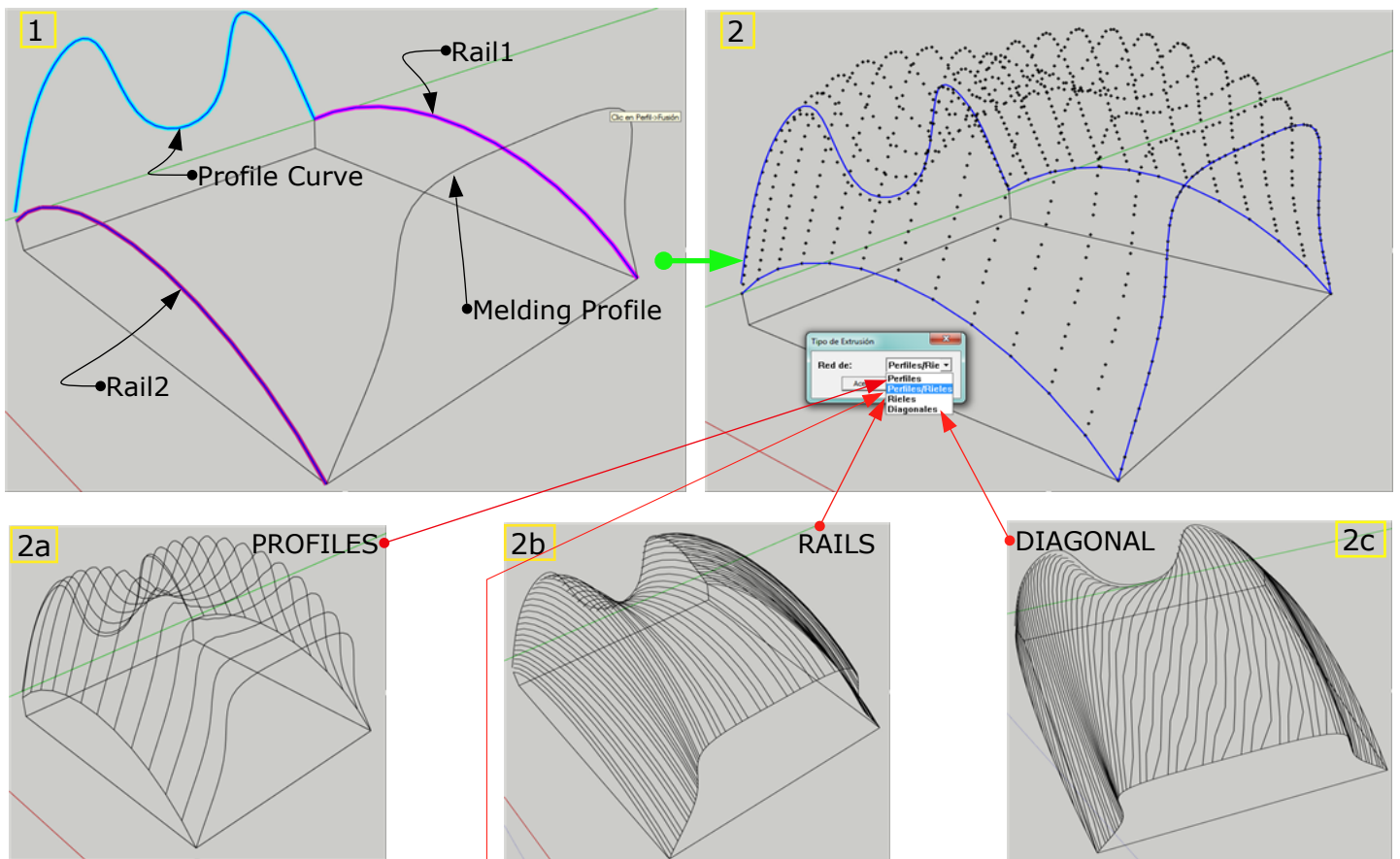
**4-** Now appears the window of the figure 2 where we can choose four options: **Profiles, Rails and Profiles, Rails, and Diagonal.**

The Result of this option are showed in figures **2a, 2b** and **2c**.

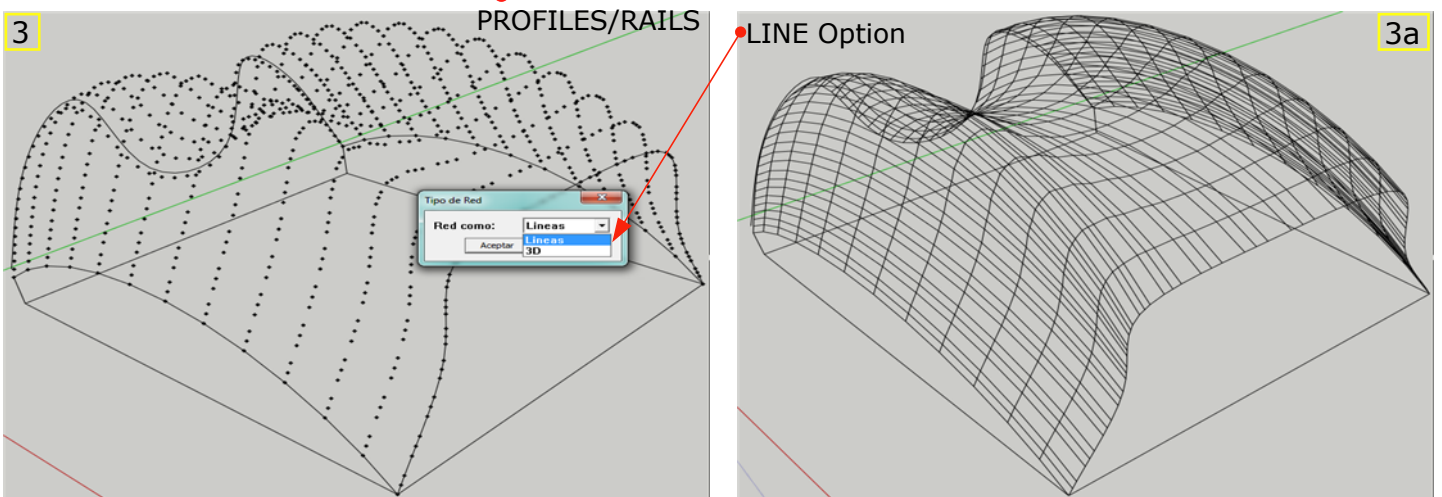
If we choose the option **Profiles and Rails**, we get another options window with two more options: **Lines** and **3D**.

The figure **3a** shows the result for the option **Lines**

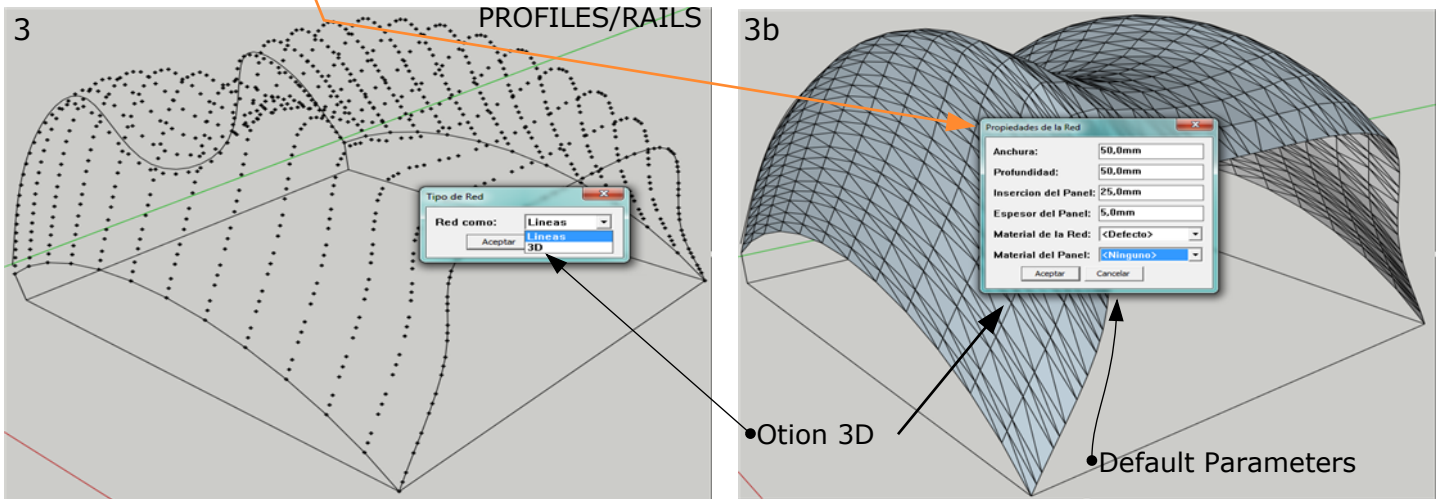
The Option **3D** are explained in the next page



### NEW OPTIONS WHEN YOU SELECT THE OPTION "PROFILES and RAILS" (Lines/3D)



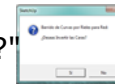
- If we select the **3D** option and Click on **Accept**. The mesh is calculated and appear another data panel (Fig. **3b**) where we can change the **Lattice** parameters.



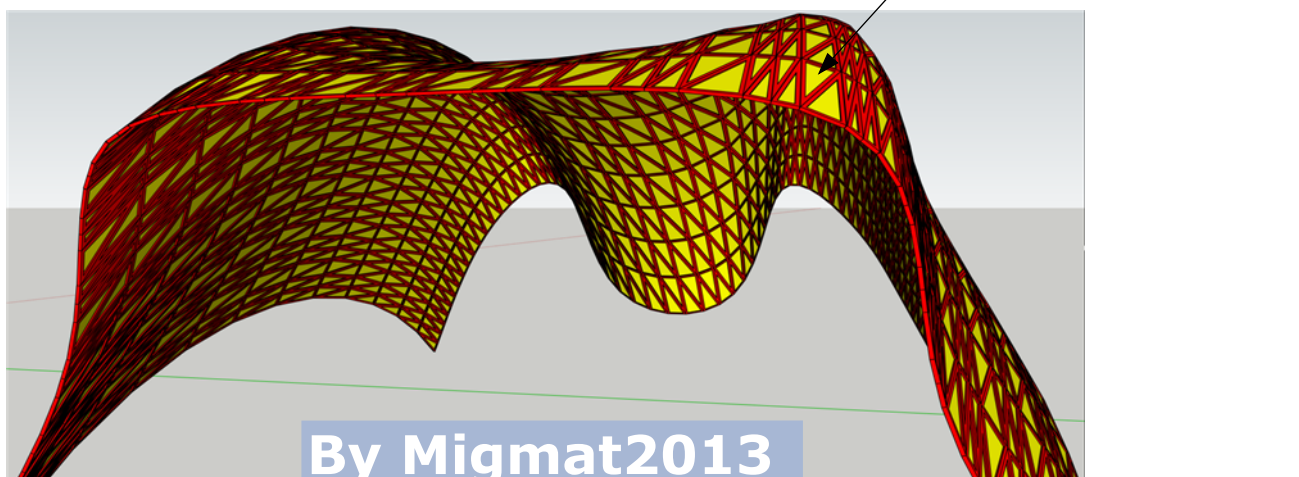
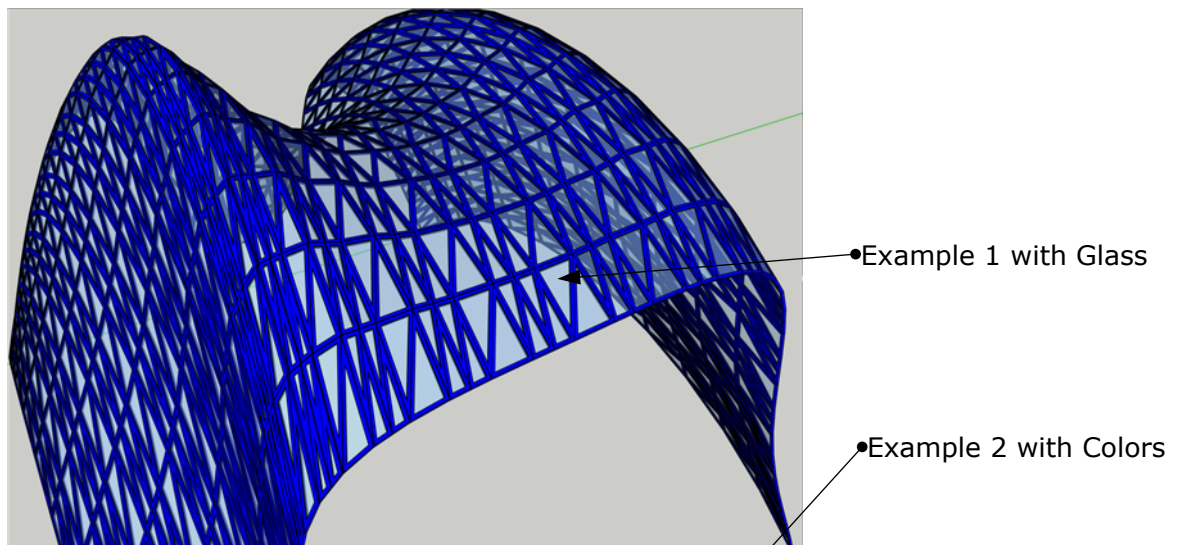
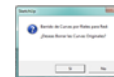
- Choosing the option **Profiles/Rails/3D** of the Fig. **3b**, we can change the next parameters:  
 \***Width**, \* **Depth**, \***Panel Inset**, \***Panel Thickness**, \* **Lattice Material**, \* **Panel Material**.

- For the Panel Material we can choose Colors or glass.
- For the Lattice Material we can choose only Colors
- When we push **Accept**, the calculation of the mesh start. It may take up to 10 minutes or more (depending of the mesh complexity).

- When you accept on the Fig.**3b** the plugin ask: "Reverse Faces?"



- When the calculation finish, ask: "Erase Original Curves?"



**EXTRUDE EDGES BY LOFT (3)**

**1-** Draw several Curves. Can be Edges, Splines, Polylines, but should be continuous (not exploded) - Is good idea to **Weld** the segments separated from the curve (Weld Plugin). **Do Not accept closed curves.**

**2-** Select the tool **Extrude Edges by Loft**

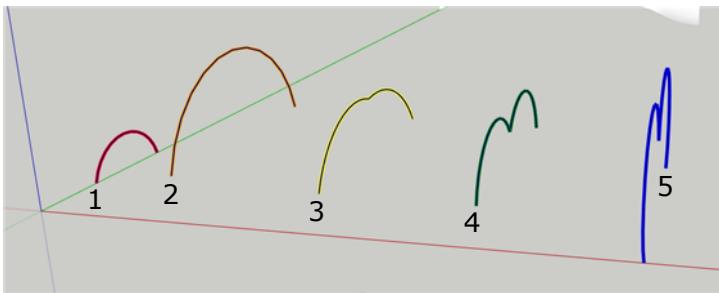
**3-** Select the number of segments between the curves and push **Intro**.

- Start the Mesh calculation. The time for finish varies depending the complexity of the surface.

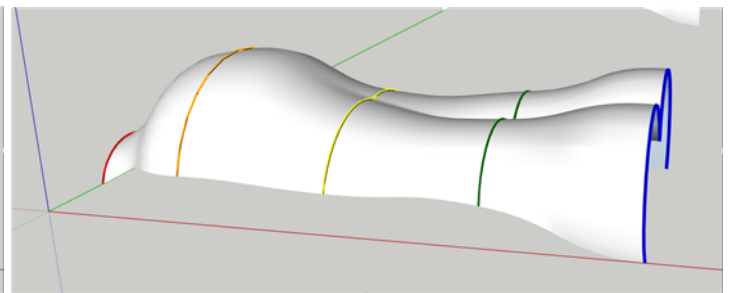
**4-** When the calculation ends, shows the mesh and ask:

- Reverse Faces?
- Smooth Edges? (We can see the progress of the face smoothing in the botom bar)
- Erase Original Curves?

- The Face generated are strong influenced by the selection order of curves



Example with 5 open curves

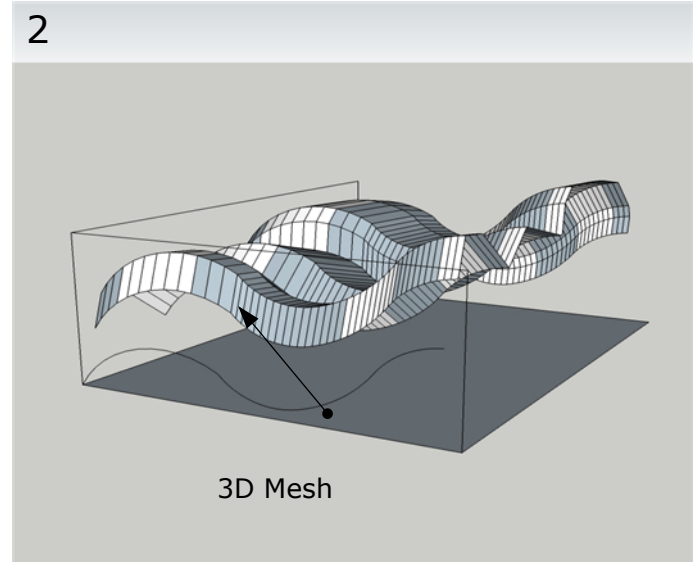
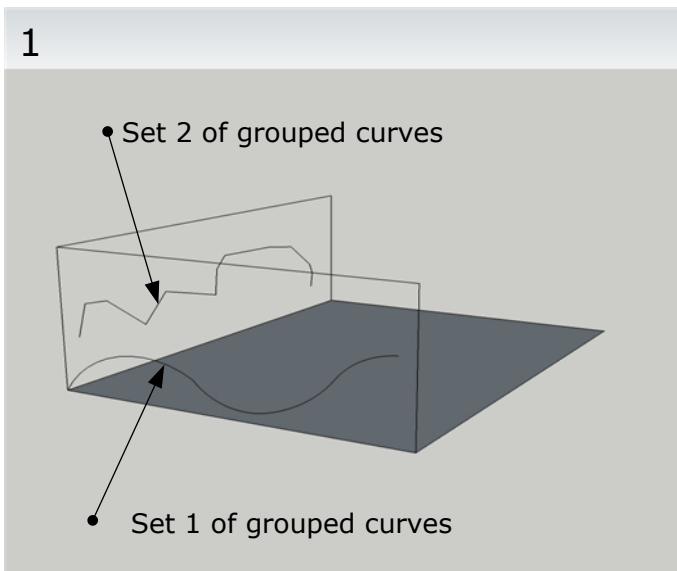


Final face smoothed

**EXTRUDE EDGES BY EDGES(4)**

**1-** Select two groups composed by curves. The groups can be lines, curves, or splines but should be **grouped**. Dont need to be perpendicular.

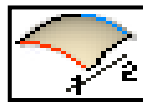
**2-** Now select the tool **Extrude Edges by Edge**.



**3-** Left Click on the icon **Extrude Edges by Edges** and start surface calculation.

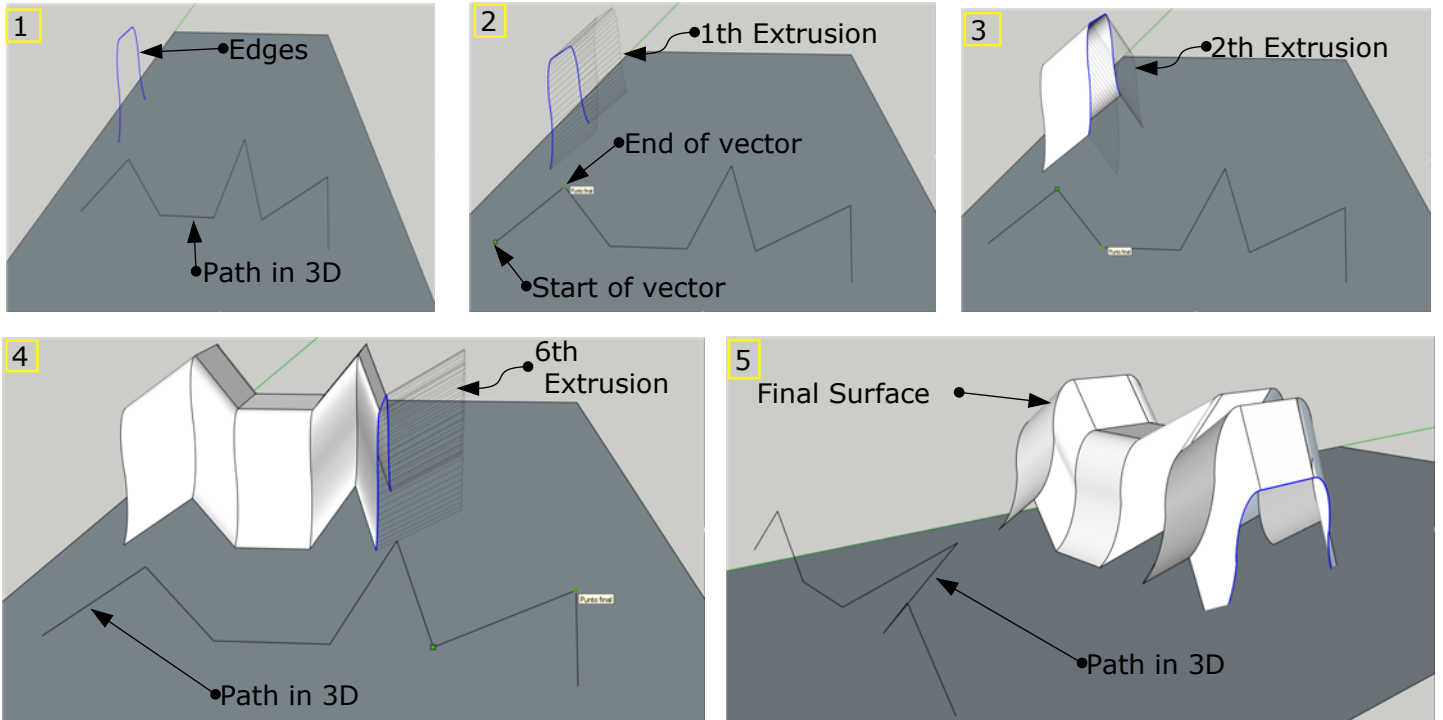
**4-** When it finish, ask the next questions:

- 1-Orient faces?, 2-Reverse faces?, 3-Intersect mesh with self?,
- 4-Erase coplanar edges?, 5- Triangulate faces, 6- Erase original groups?.

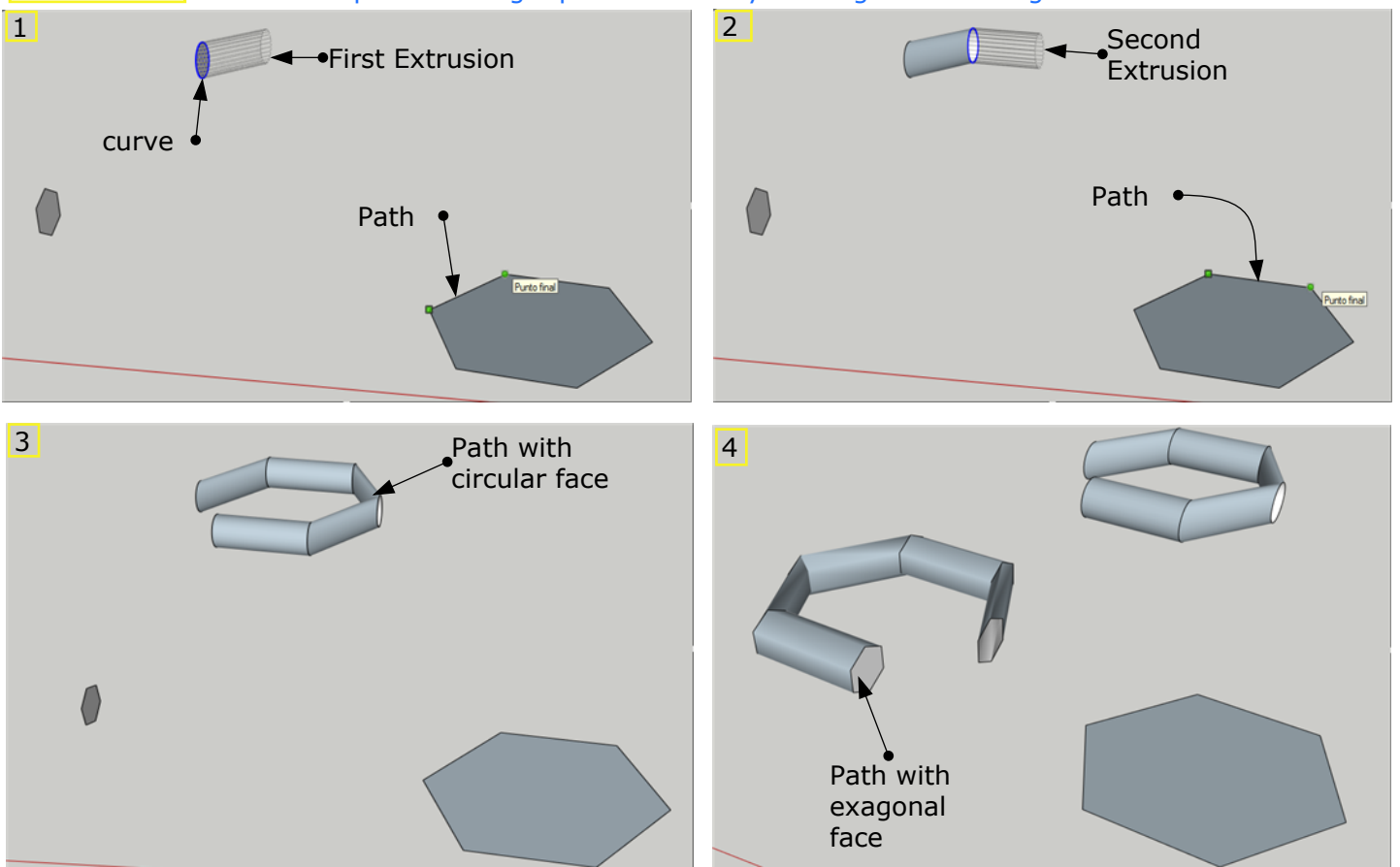


- 1- Select a Edge, or a set of Edges (curves, Polylines, Splines, Becier). **Dont need to be grouped.**
- 2- Click on the start of a Edge or any other Point and move the mouse to a different point and make Left Click. The Edge (or set of edes) are converted in the preview of a face that follow the direction of the vector defined by the two points selected. We get the first Extrusion.
- 3- For continue to extruding faces, Left Click on any other point and move again the mouse to a new point. We can see how the preview of the face are moving as we move the final point with the mouse. To generate the face push the left button of the mouse again. We get the second Extrusion.
- 4- We can repeat steps 2 an 3 to generate any number of conected surfaces.
- 5- To finish the process push **ESCAPE**. The plugin ask now: a) Reverse Faces?, b) Explode Group?

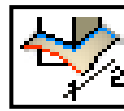
**EXAMPLE 1** Face developed following a path defined in 3D space



**EJEMPLO 2** Face developed following a path defined by the edges of a hexagon



## EXTRUDE EDGES BY VECTOR TO OBJECT (6)



By Migmat2013

7

1º - Draw a Face and select it.

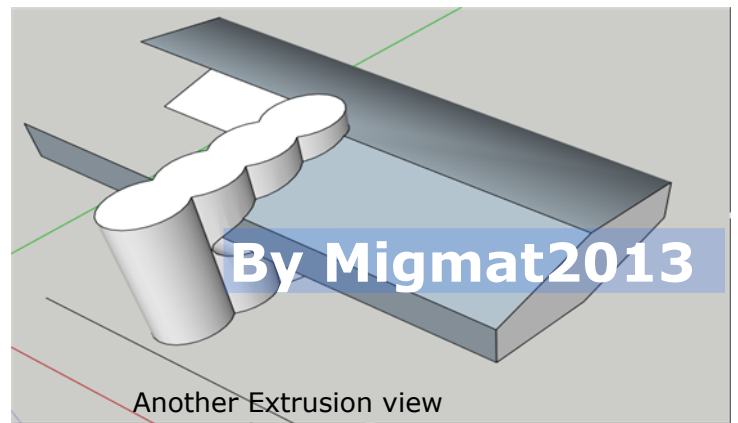
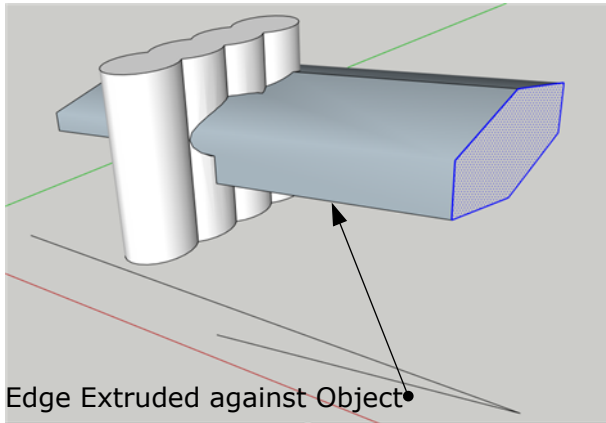
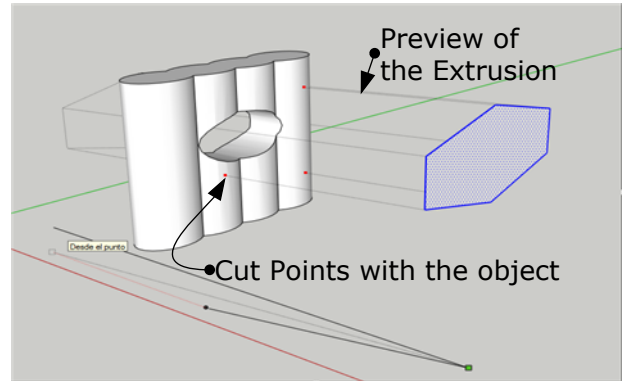
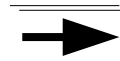
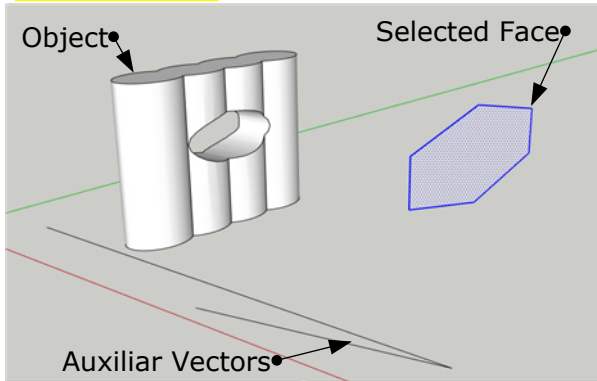
2º - Select the tool **Extrude Edges by Vector to Object**.

2º - Make Left Click in any point of the drawing (a edge, a face, etc) and move the mouse over the desired direction. We will see the projection of the edges selected, that follow dynamically the vector defined by the first point selected (green point) and the current position of the mouse.

4º - Click on the desired point to define the second point of the extrusion vector and immediately the extrusion are executed.

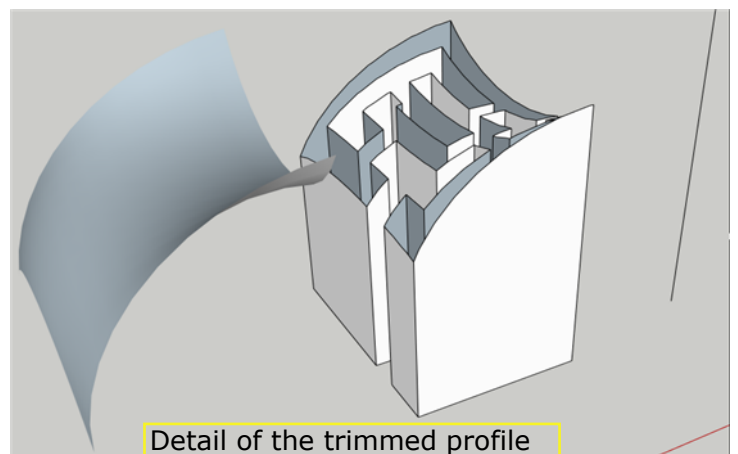
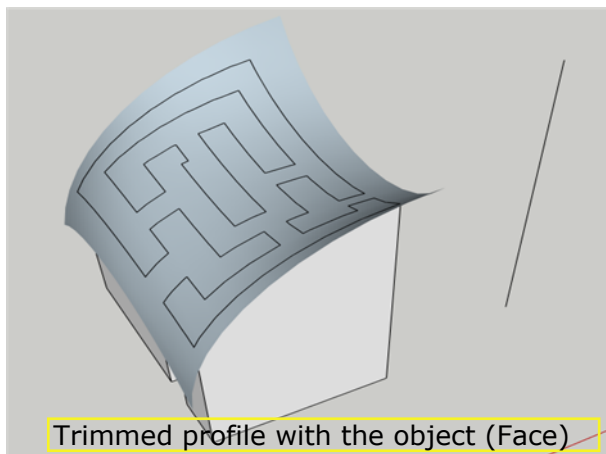
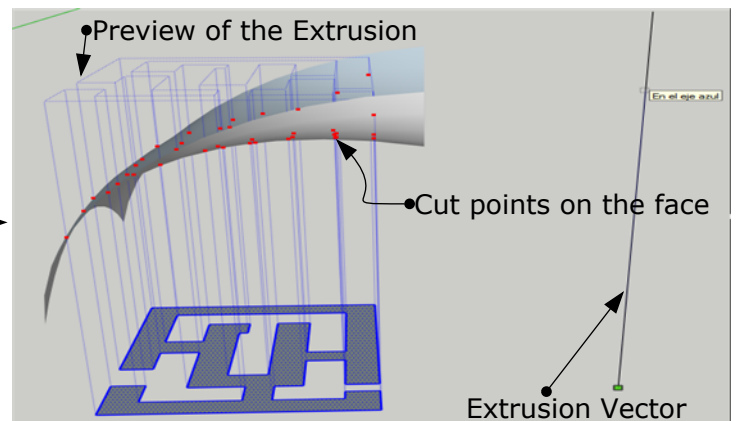
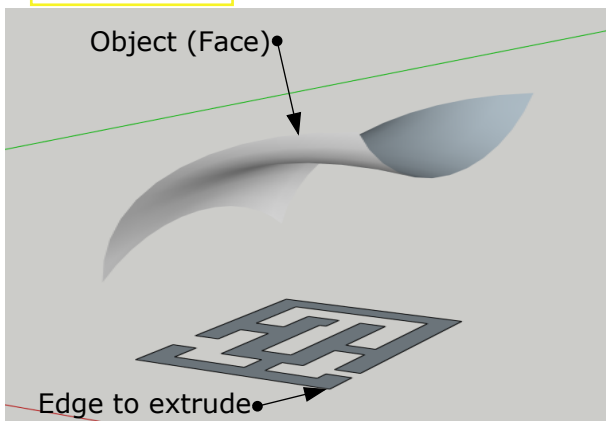
- After that , the plugin ask: Reverse Faces?; Explode Group?

### EXAMPLE 1

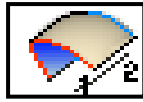


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### EXAMPLE 2

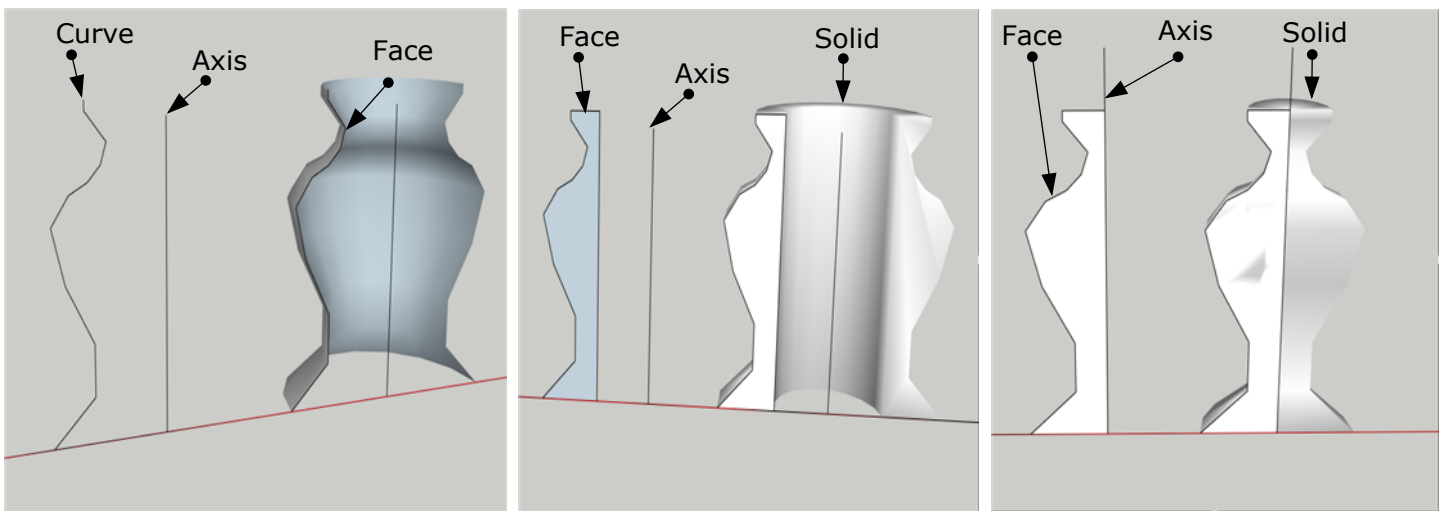


## EXTRUDE EDGES BY LATHE (7)

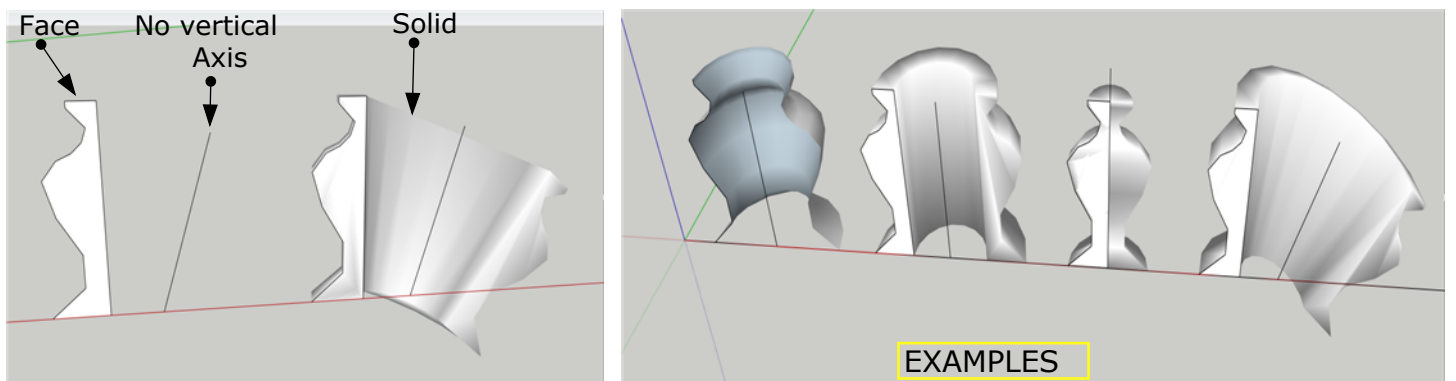


- 1- Draw a Curve (Edge, spline, polyline) or a Face. Now draw a Rotation Axis.
  - For the curve you can use a Bécier or you can use a polyline and convert it to a bécier curve.
- 2- Select the Curve or the Face that you just drew in the step 1.
- 3- Select the tool **Extrude Edges by Lathe**. (Follow the instructions on the bottom bar).
- 4- Select the first point of the Rotation Axis and next, the second point. Make Left Click on the screen to accept.
- 5- Now you must write the Sweep Angle in the **VCB**. Write the angle and push **Intro** (360° for a full turn). The Face (or Solid) are drawn and the plugin asks for several options: Reverse Faces?, Erase Coplanar Edges?, Intersect mesh with Self?, Smooth Edges?.

- If you draw a **Curve** as profile the sweep generates a **FACE**.
- If you draw a **Face** as profile the sweep generates a **SOLID**.



- The axis does not have to be vertical or coplanar.

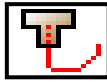


EXAMPLES

By Migmat2013



**EXTRUDE EDGES BY FACE (8)**

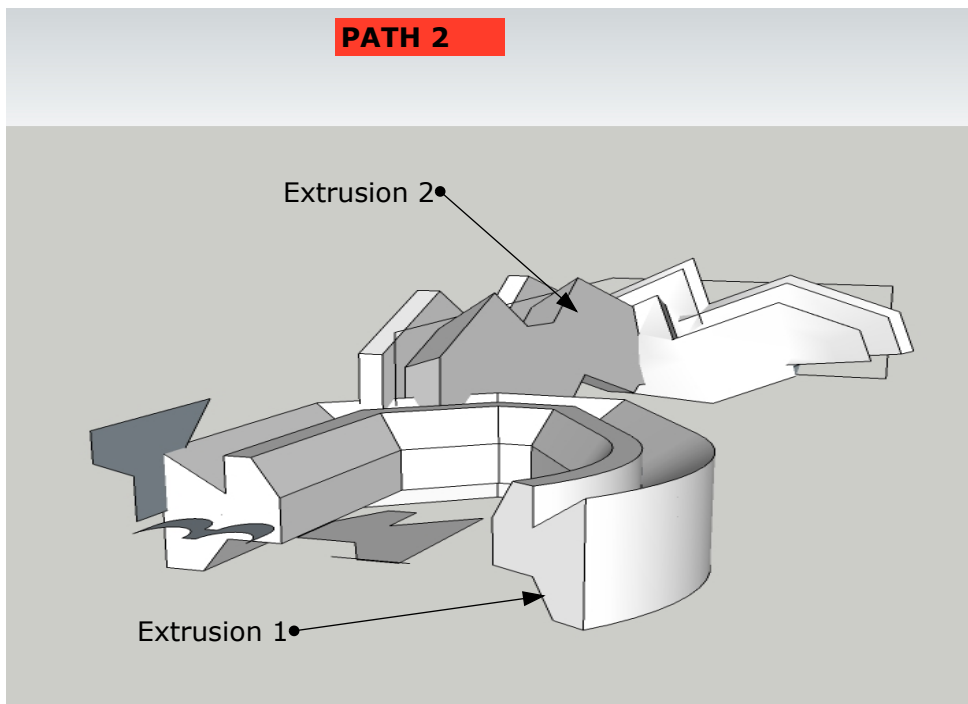
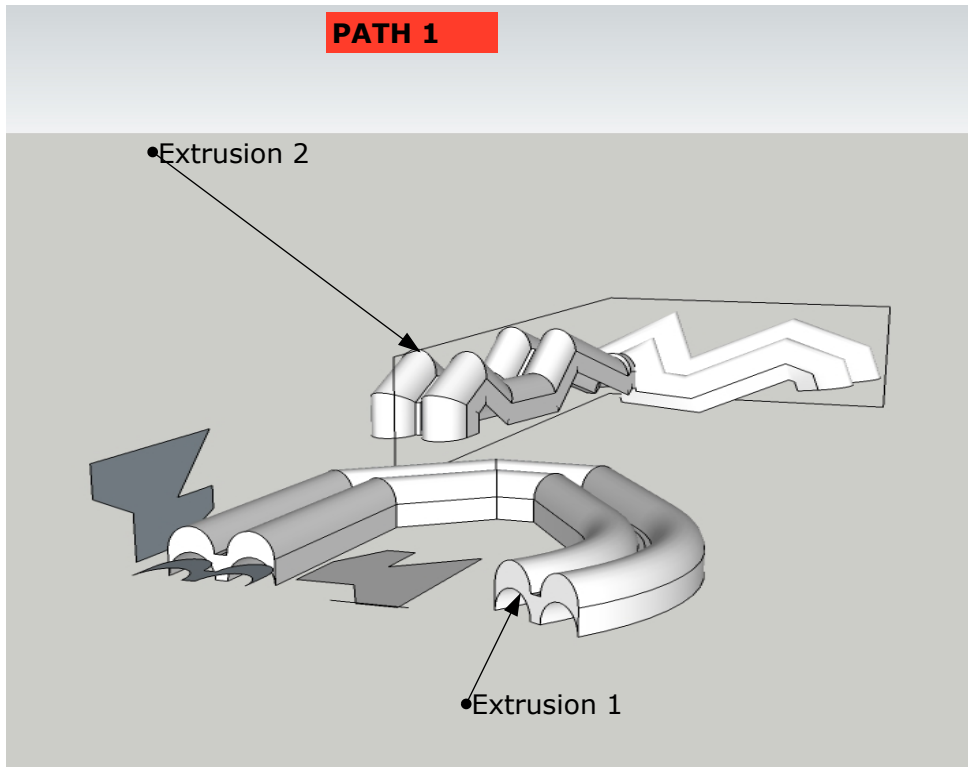
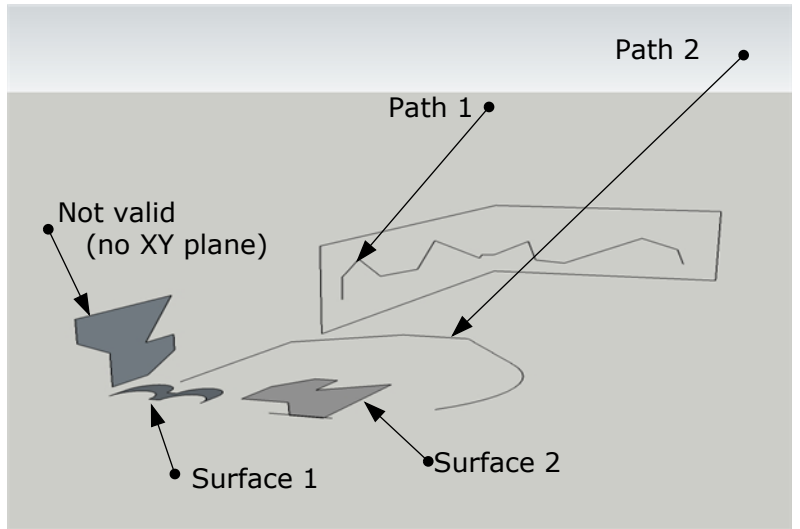


1- Draw a Surface and a Path. The surface should be on **XY** plane. The Path can be composed for edges, curves, splines or becier curves, but **NOT** grouped.

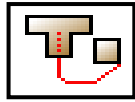
2- Select both, the surface and the curve.

3°- Now select the tool **Extrude Edges By Path**, and the surface will be draw.

! (The curves should be groupe, if not the tools does not work)



## EXTRUDE EDGES BY FACES(9)

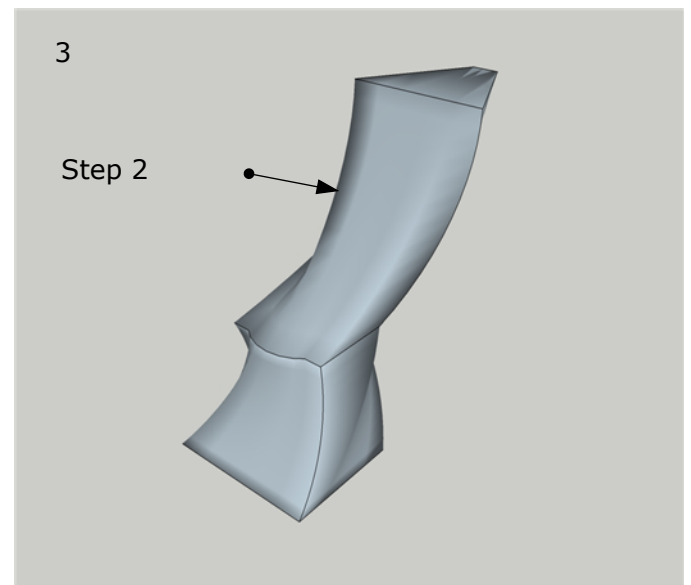
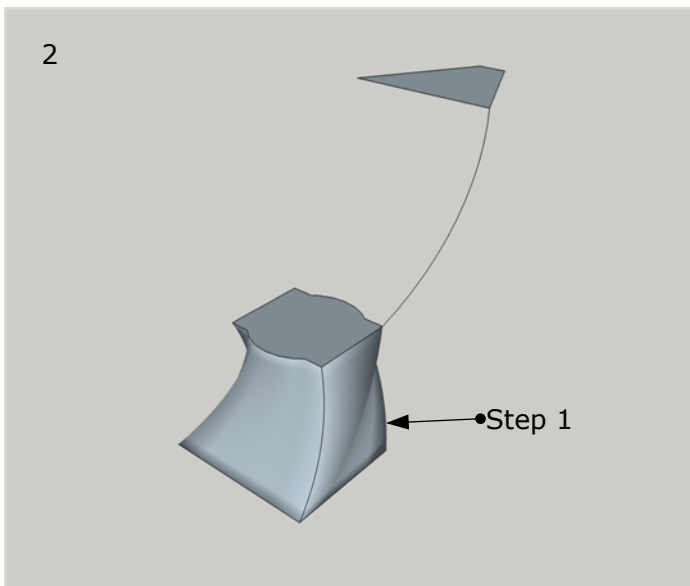
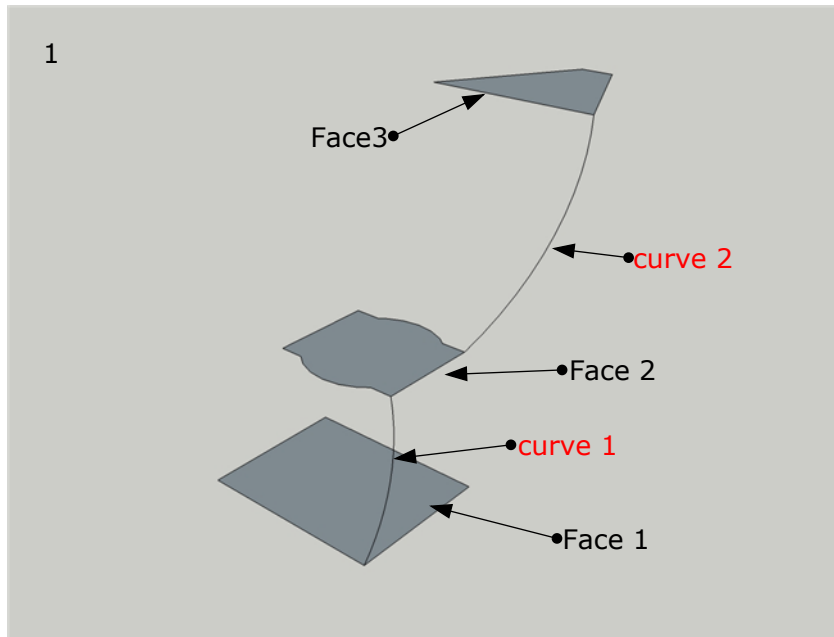


**1-** Draw two Surfaces and one Curve (can not be a edge) that touch both surfaces  
 - You can use a curve Becier or you can use a polyline and convert it to a becier curve.

**2-** Select the tool **Extrude Edges By Face**.

**3-** Follow the instructions of the bottom bar. You should select the faces and the curves by indicated order in the bottom bar.

-The Extrusion can be made on steps one by one, and can be chained to make several extrusion joined, as you can see on the figures 2 and 3.



**4-**The progress of creation of the surface can be seen on the bottom bar. After that, we can answer several questions:

Reverse faces?, Erase Coplanar Edges?, Intersect mesh with Sef?, Smoth Edges?.



**1- Draw 4 Curves** (distinct) and a **Flat Surface**. Can be Edges, Splines, Polylines, but should be continuous (not exploded) - Is good idea to **Weld** the segments separated from the curve (Weld Plugin). **Do Not accept closed curves**.

- The Surface should be small enough compared with the final mesh or you can not see the Lattice .

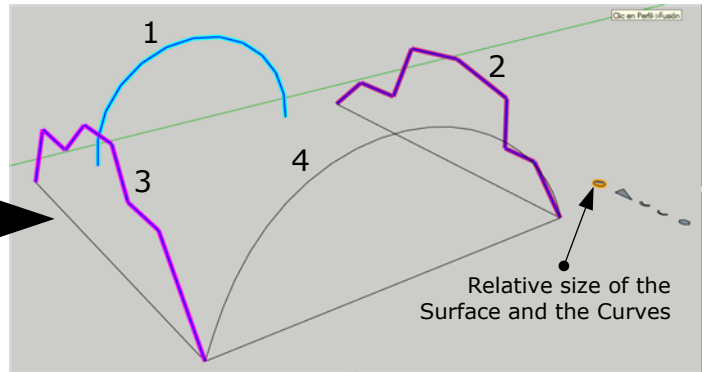
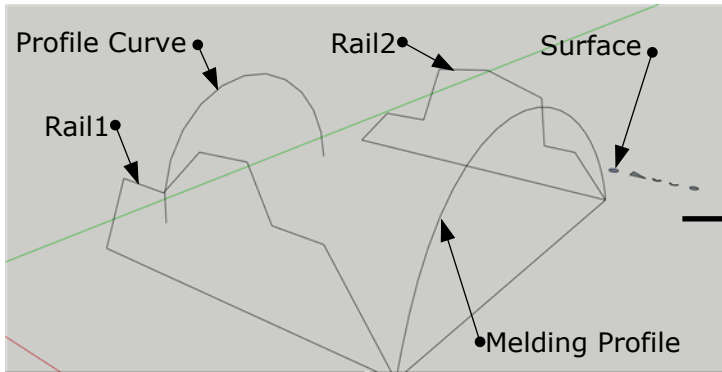
**2-Select the flat surface.** Examples:



**3- Select the tool Extrude Edges by Rails + Face**

**4- Now select:** a) Profile Curve, b) First Rail, c) Second Rail, y d) Molding Profile.

- The Mesh generated can be completely different if you change the order when you pick the curves.

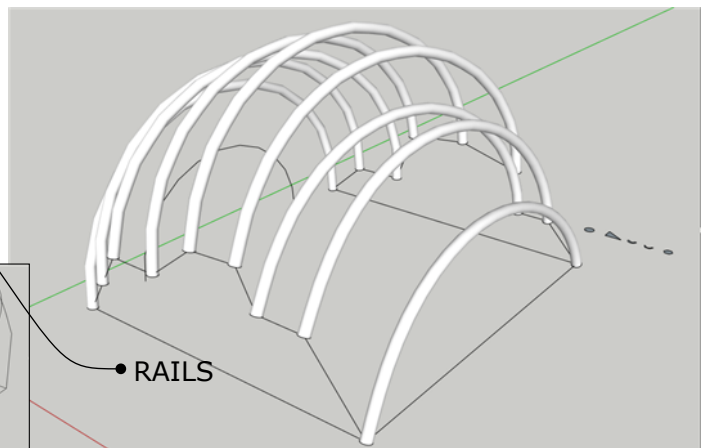
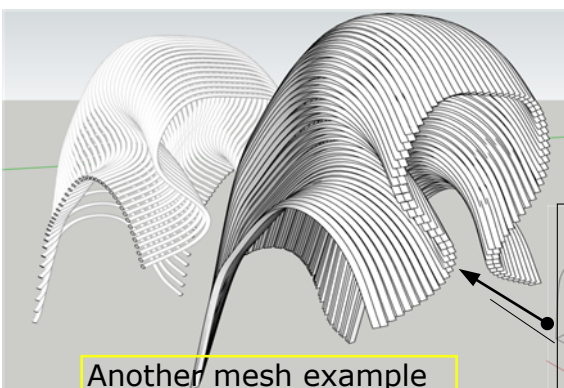
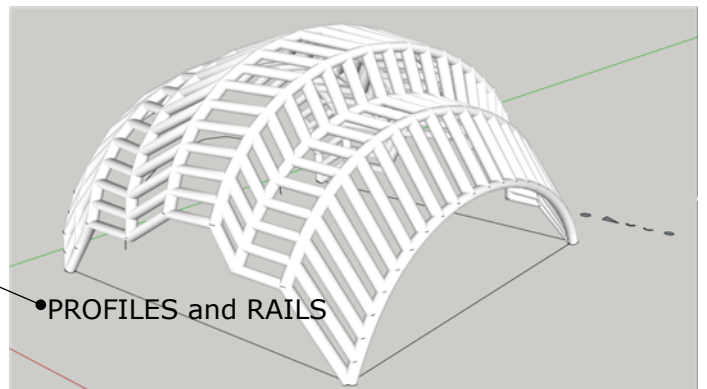
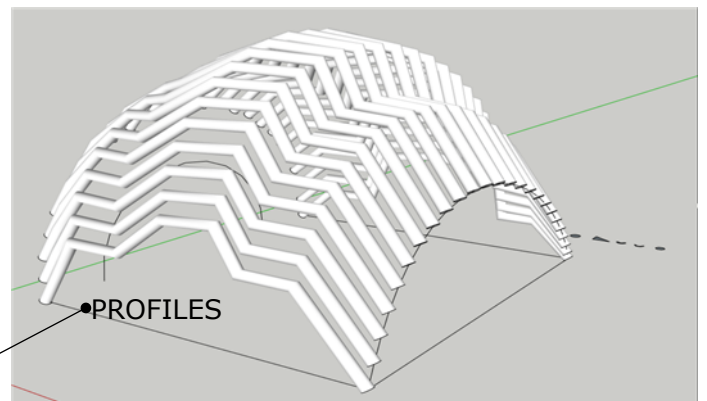
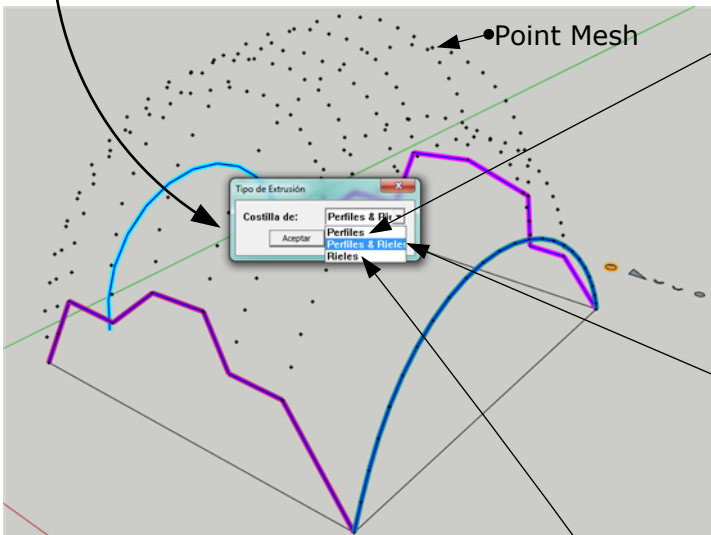


When the calculation end, we can see a mesh made by points and the plugin ask:

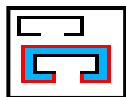
### EXTRUSION TYPES

- Profiles
- Profiles and Rails
- Rails

We can see the results in the next images:



Another mesh example

**EXTRUDE EDGES BY OFFSET (11)**

- 1- Draw Lines or Curves that are continuous (no gaps). Can be Edges, Splines, B-splines, etc, **but should be in the same PLANE**. It is not necessary to weld it.
- 2- Select the curves just drawn in step 1.
- 3- Select the Tools **Extrude Edges by Offset**.
- 4- A pop up window will require to input the Offset. Write a value and accept pushing **Intro**.
- 5- When the calculation ends, shows the faces and ask: - Reverse Faces?, - Erase Original Curves?, - Explode Group?

