

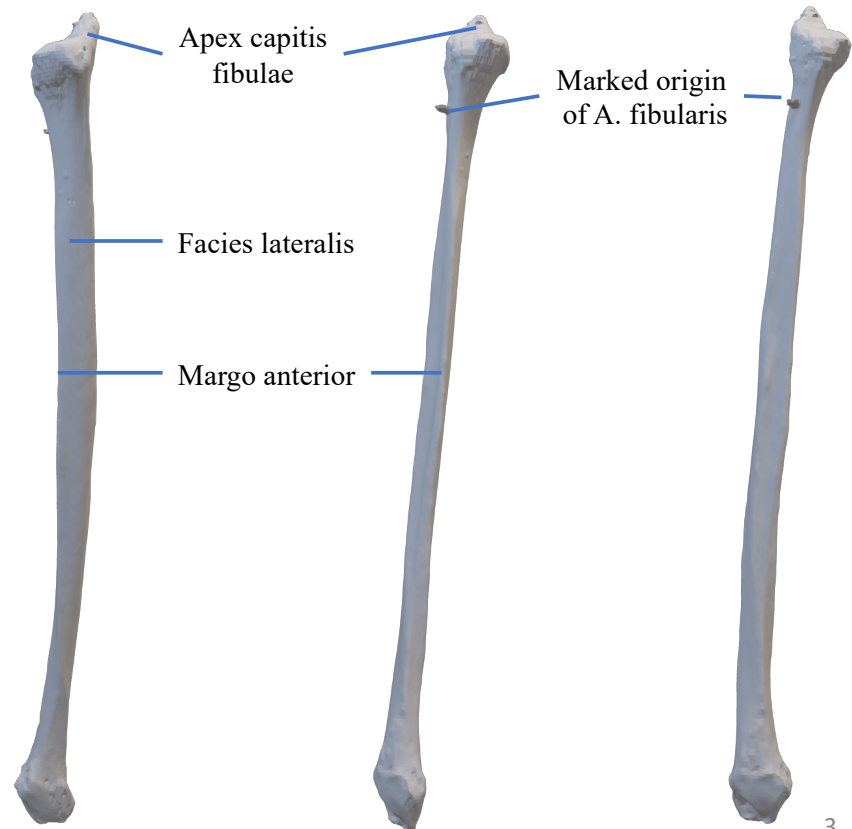
Supplementary Data

A step-by-step guide for in-house Blender-based free
fibula flap planning

General considerations

Principles – fibula positioning

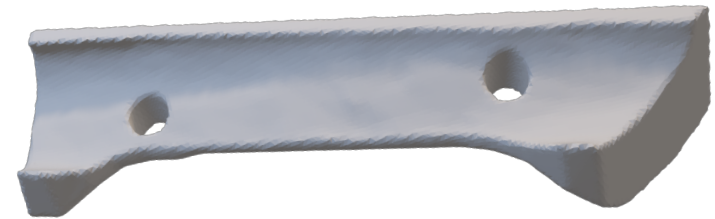
- Pedicle always lingually
- Facies lateralis always buccally



Principles – cutting guides

- *Fibula*

- Margo anterior as guiding rim
- “dog bone like” design
- Drilling holes



- *Mandible*

- Extraoral resection: single guides or one block guide
- Intraoral resection: block guide and slit
- Drilling holes



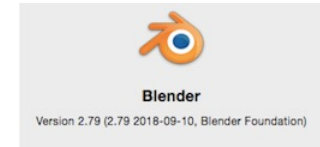
Blender – important commands

- *Object Mode*
 - Select and deselect
 - “S” - scale
 - Add Modifier → Boolean operation → Intersect/Difference/Union

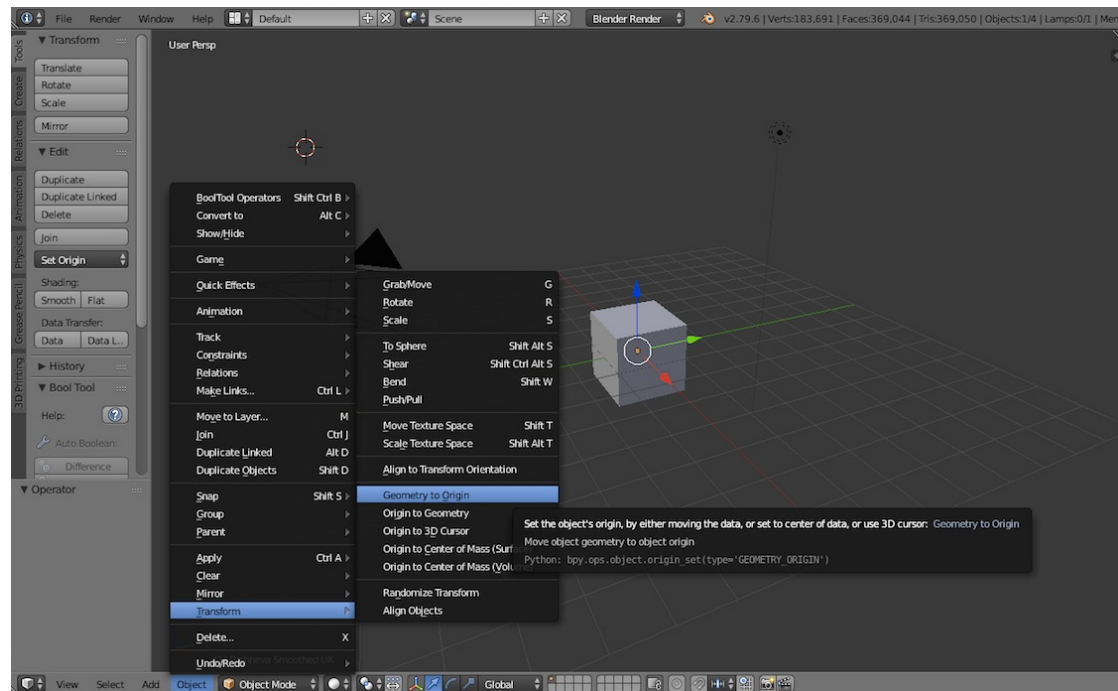
- *Edit Mode*
 - ctrl+R → subdivide
 - Movements of points, lines or areas

Begin planning

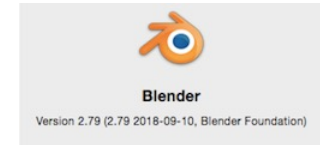
Start – import



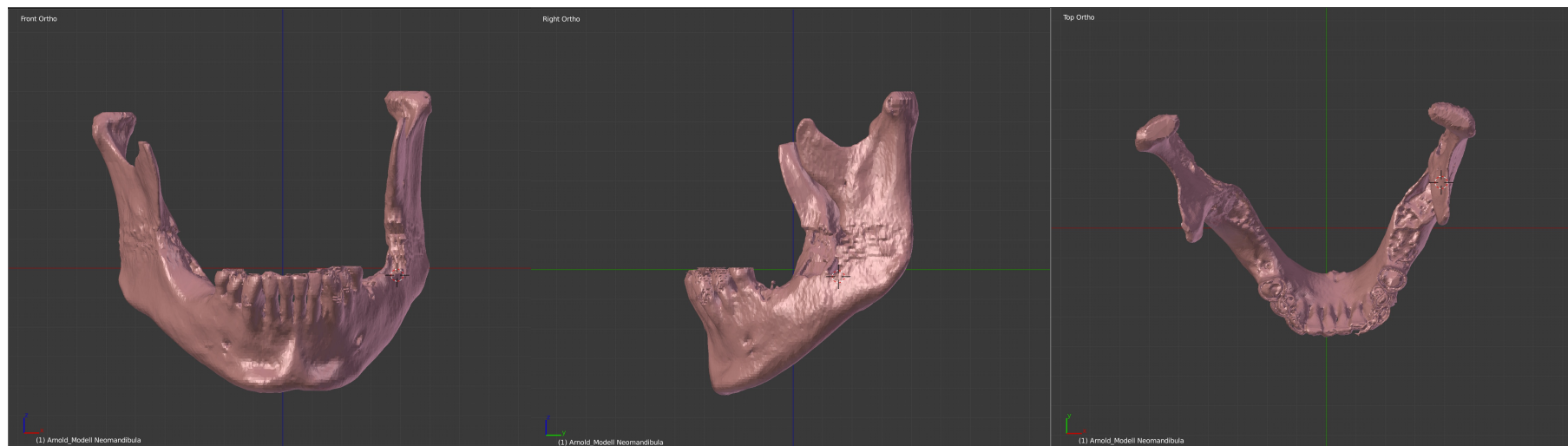
- Import STL file
- Command: Transform – Geometry to Origin



Start – orientation



- Model orientation with Numpad numbers 1, 3 and 7

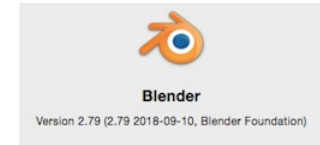


1

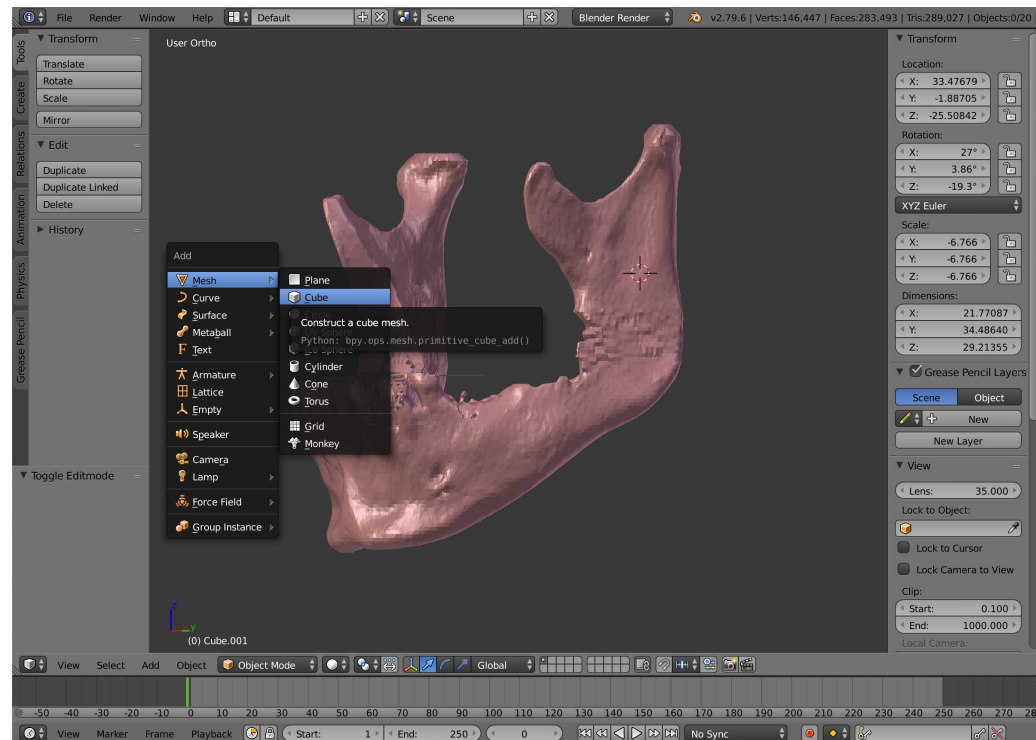
3

7

Define cutting planes



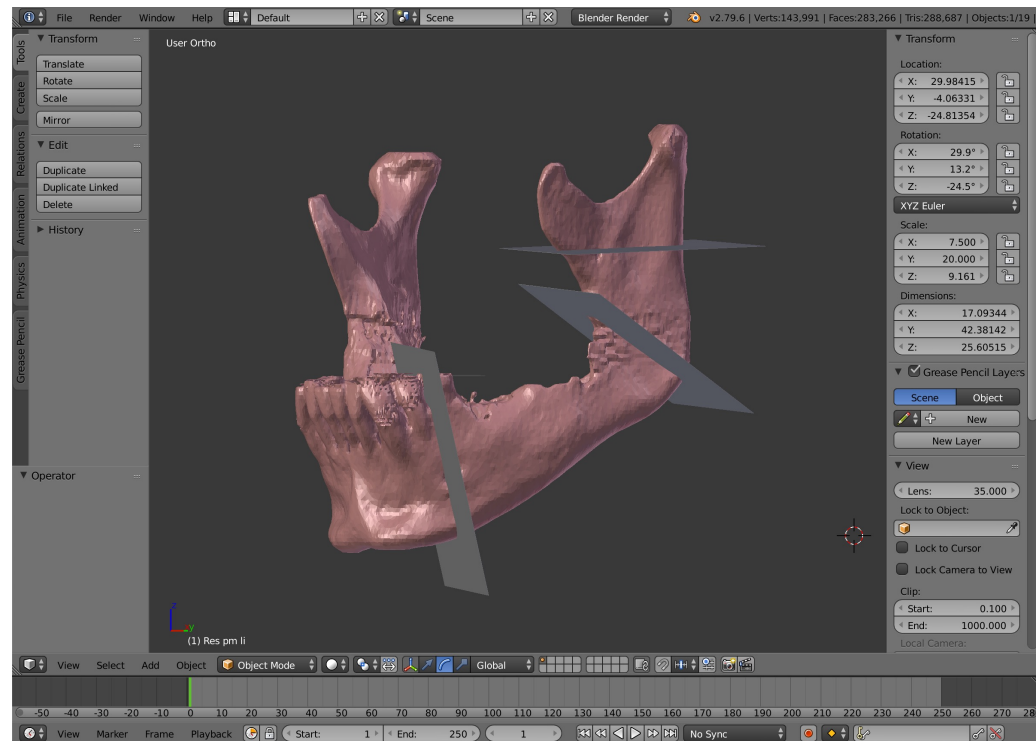
- Shift+A: Add Cube
- Cube's depth 0.1 mm



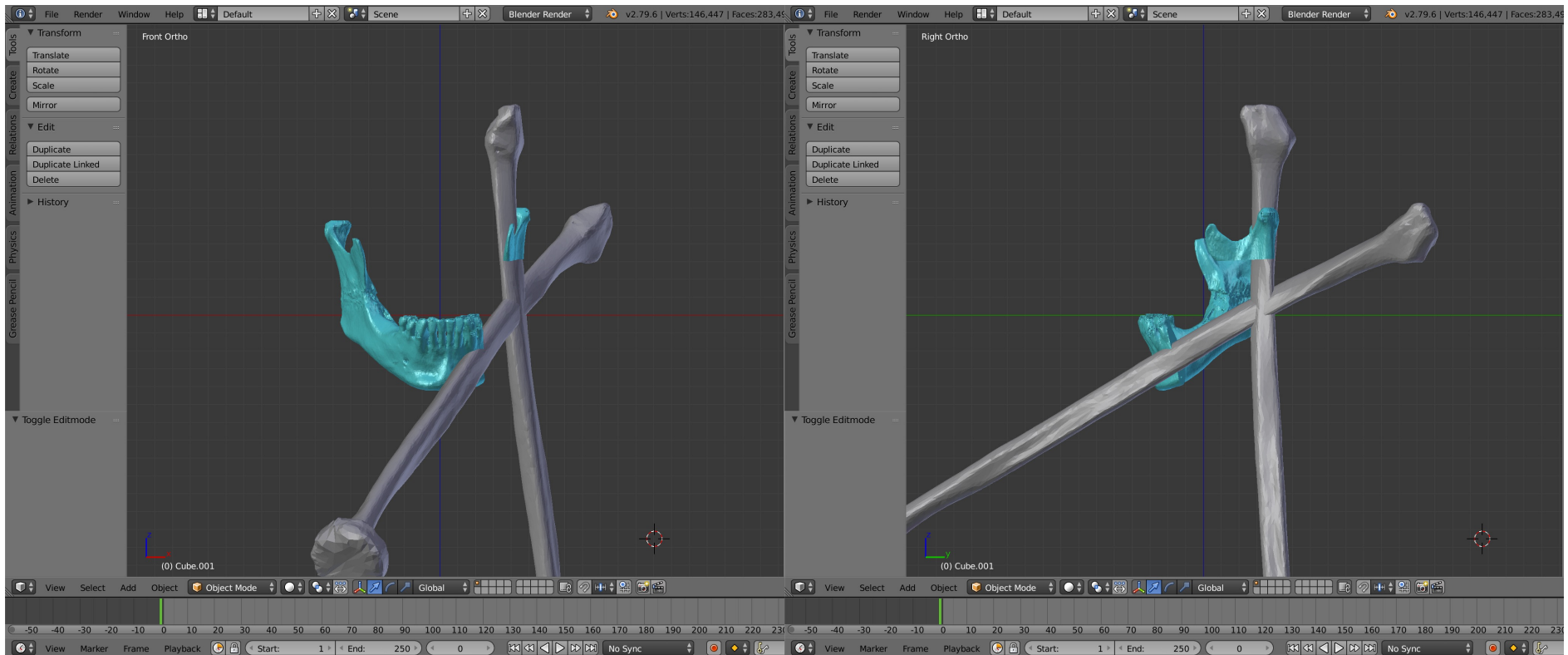
Define cutting planes



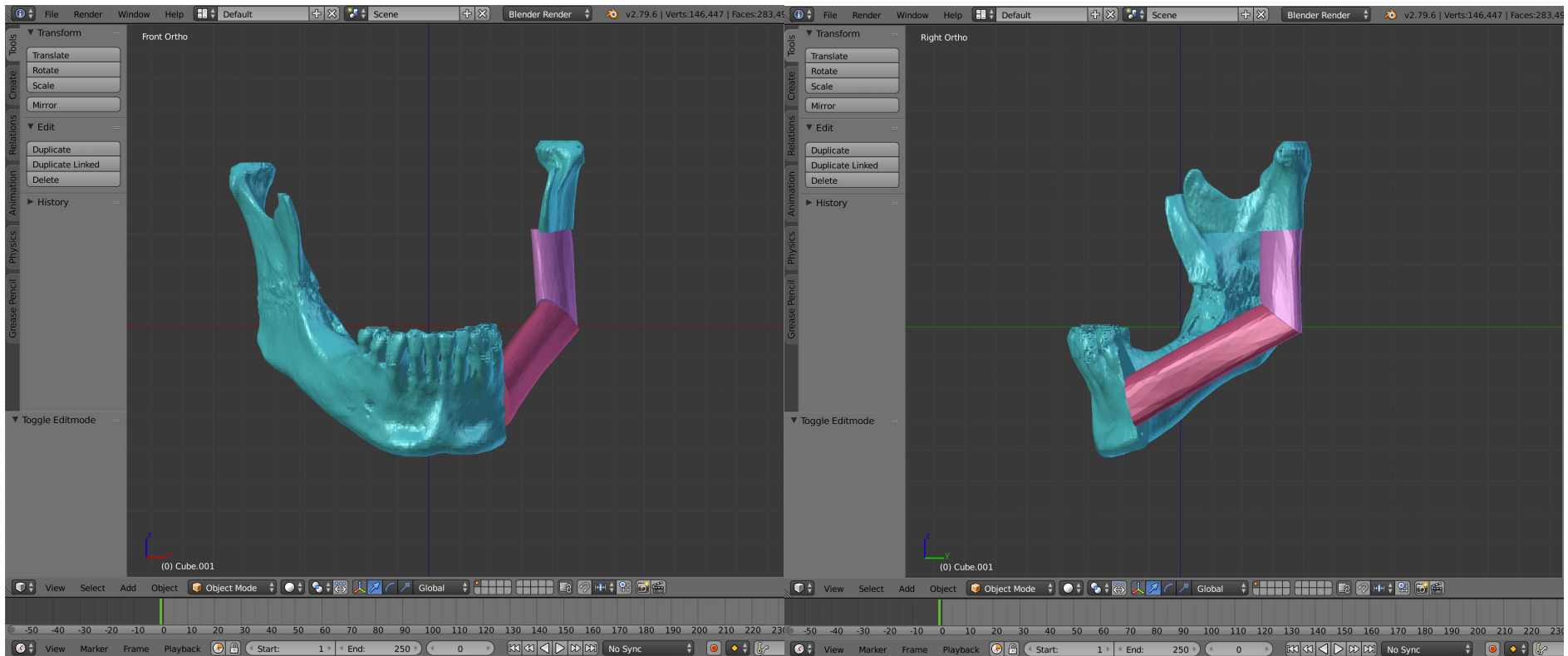
- Shift+A: Add Cube
- Cube's depth 0.1 mm
- Position cutting plane
- Duplicate cutting plane



Define fibula positions

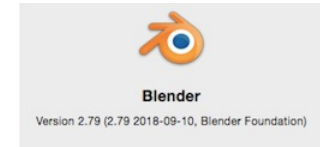


Simulate fibula positions → Neomandibula

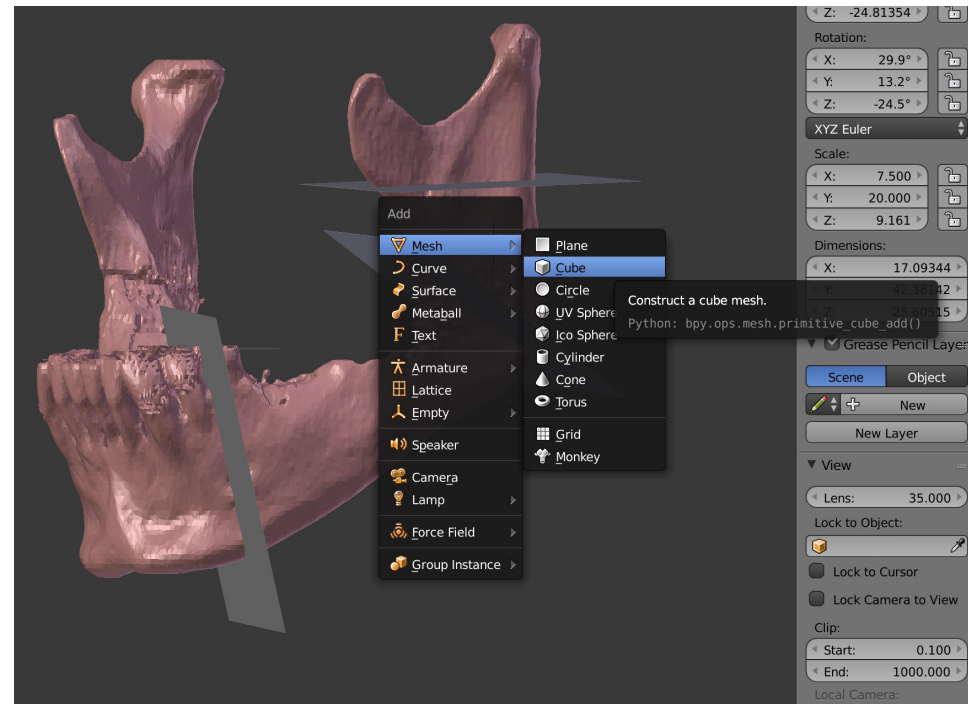


General principles of cutting guide design

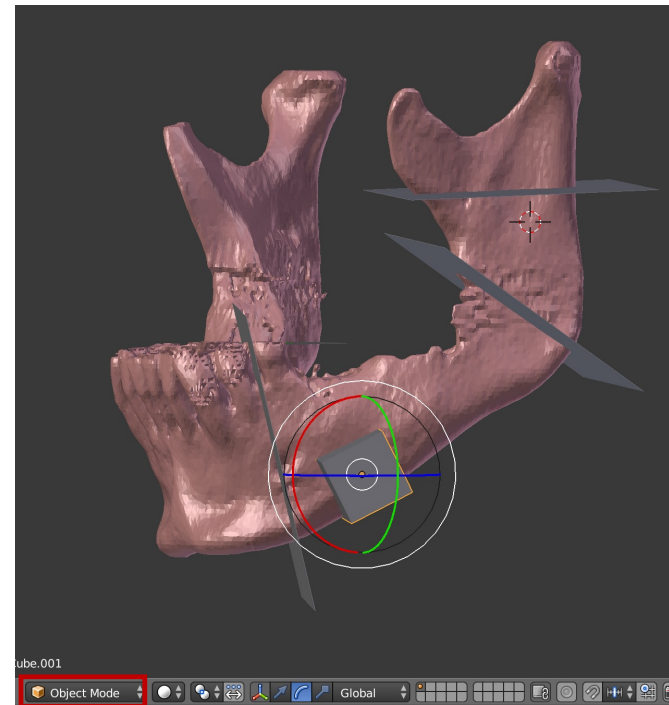
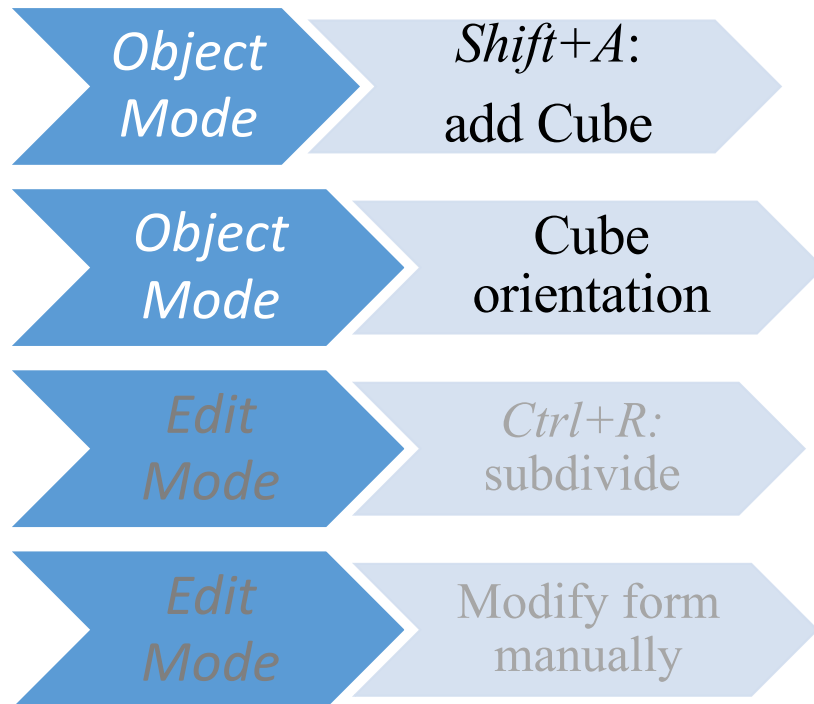
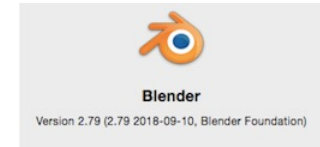
Cutting guides – Design



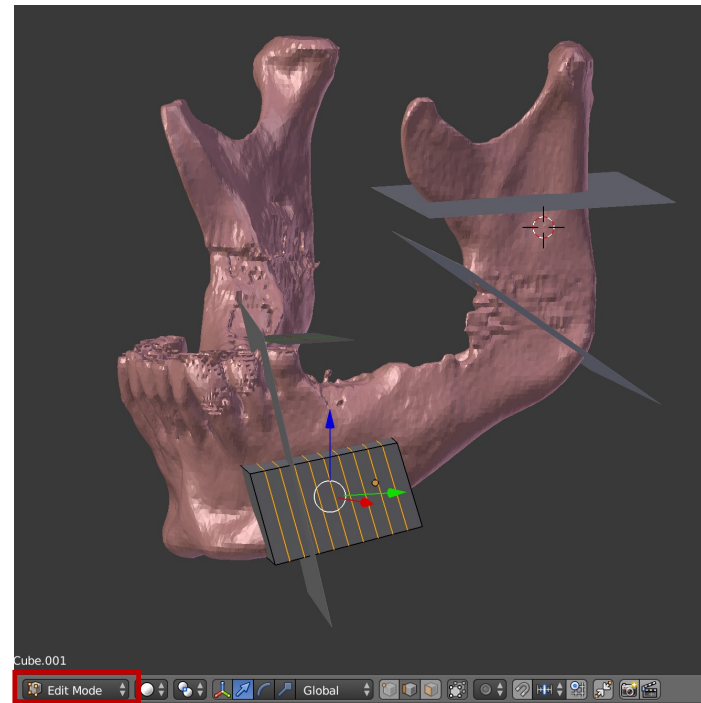
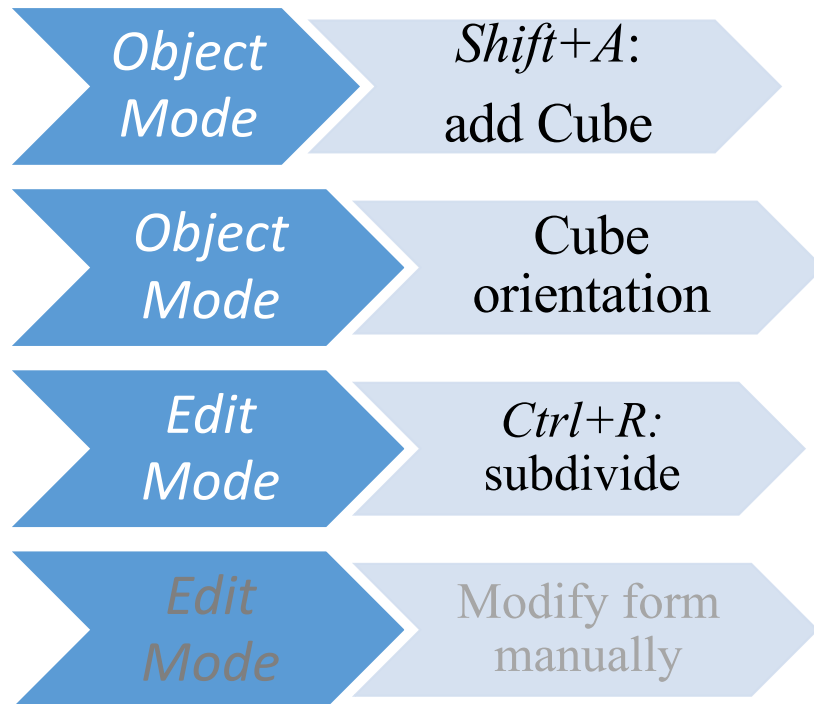
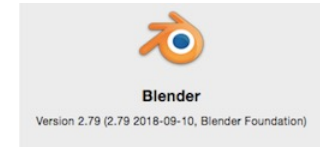
- Object Mode** → *Shift+A*: add Cube
- Object Mode** → Cube orientation
- Edit Mode** → *Ctrl+R*: subdivide
- Edit Mode** → Modify form manually



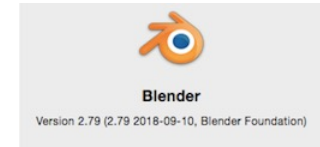
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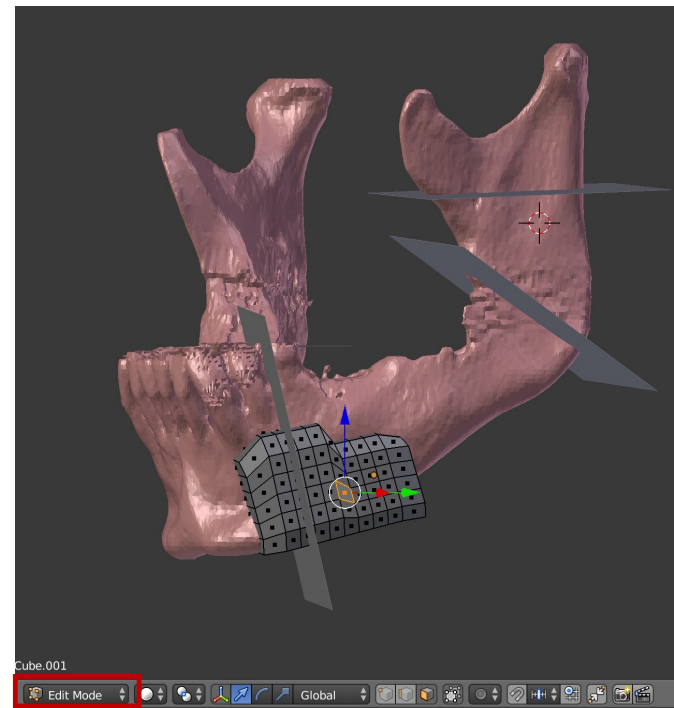
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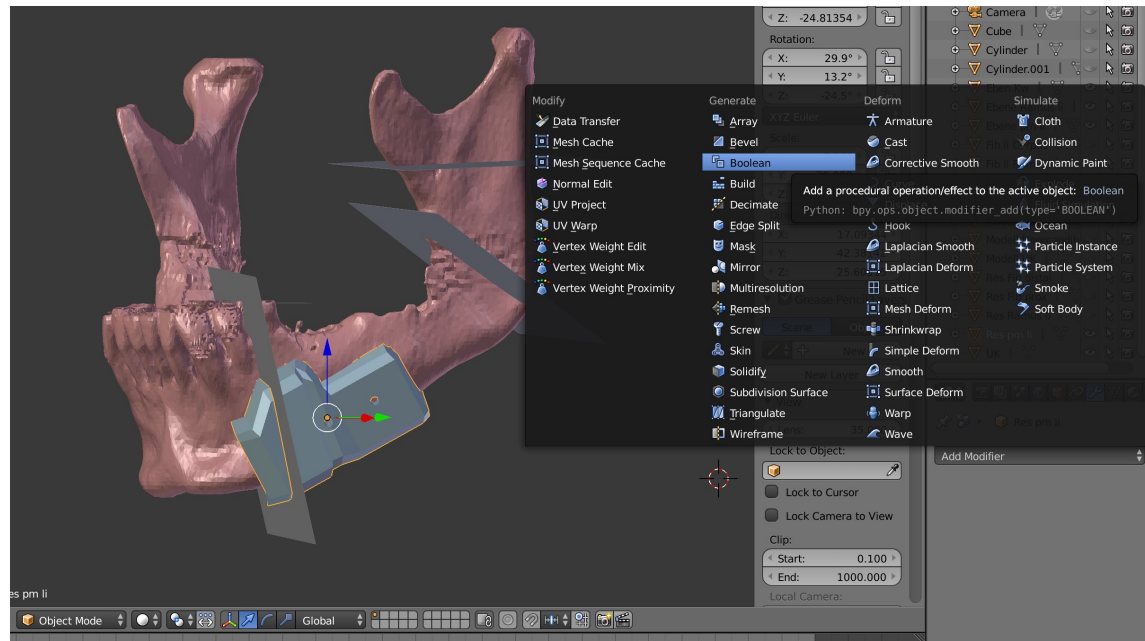


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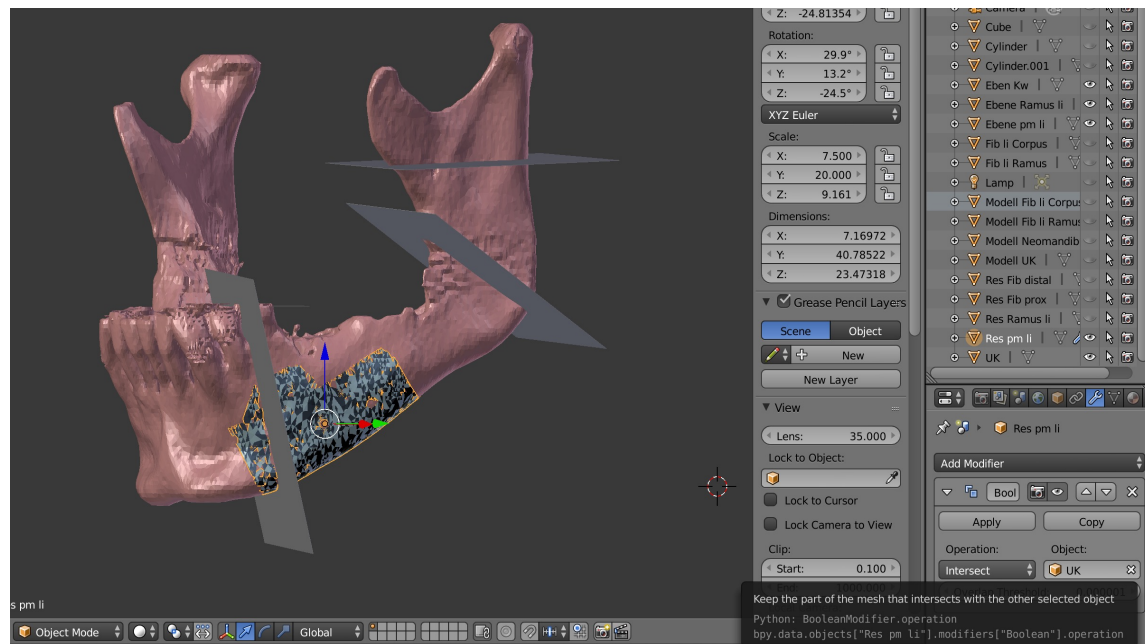
Cutting guides – Boolean in *Object Mode*

- Mark cutting guide → *Add Modifier* → *Boolean*
- *Difference* (guide - mandible) → Apply
- Boolean operations for mandibular and fibular cutting guides



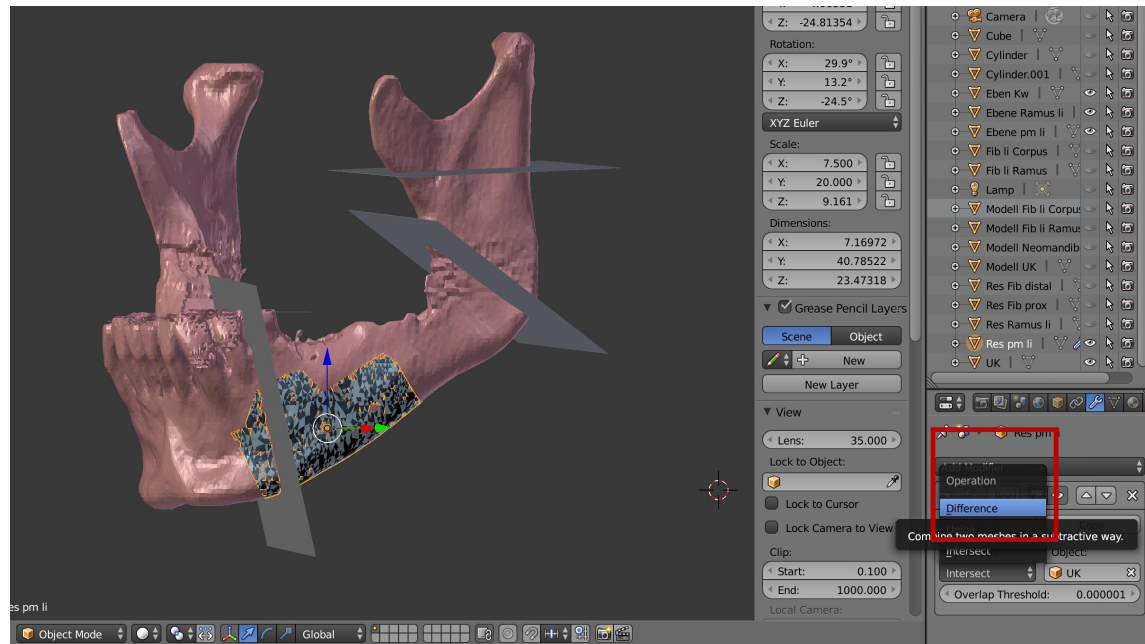
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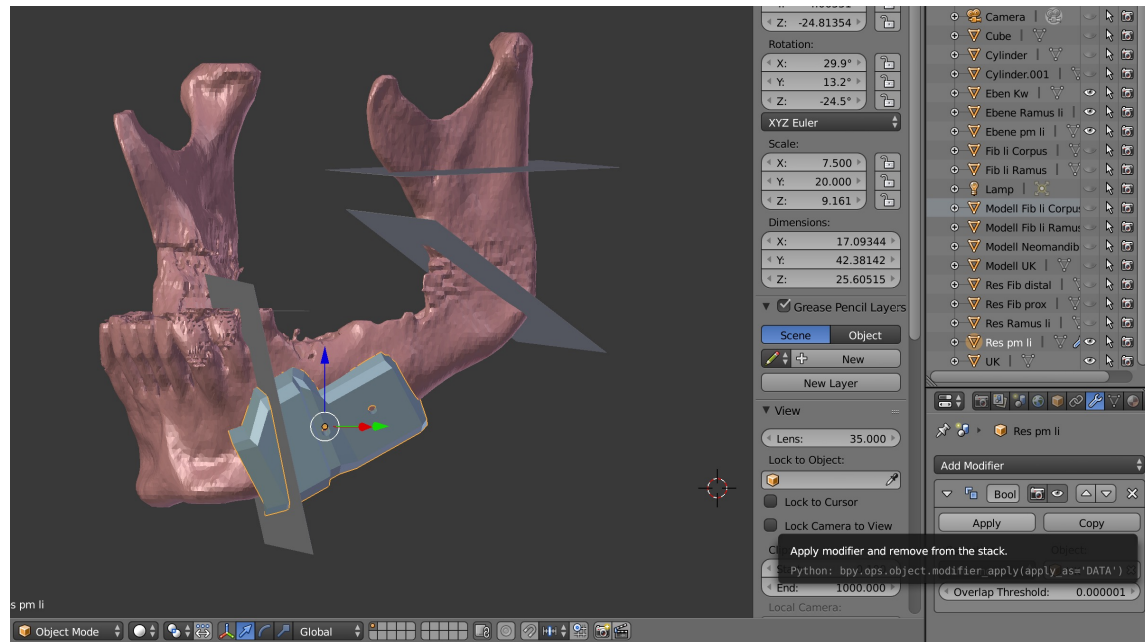
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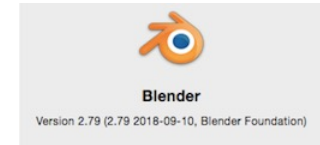


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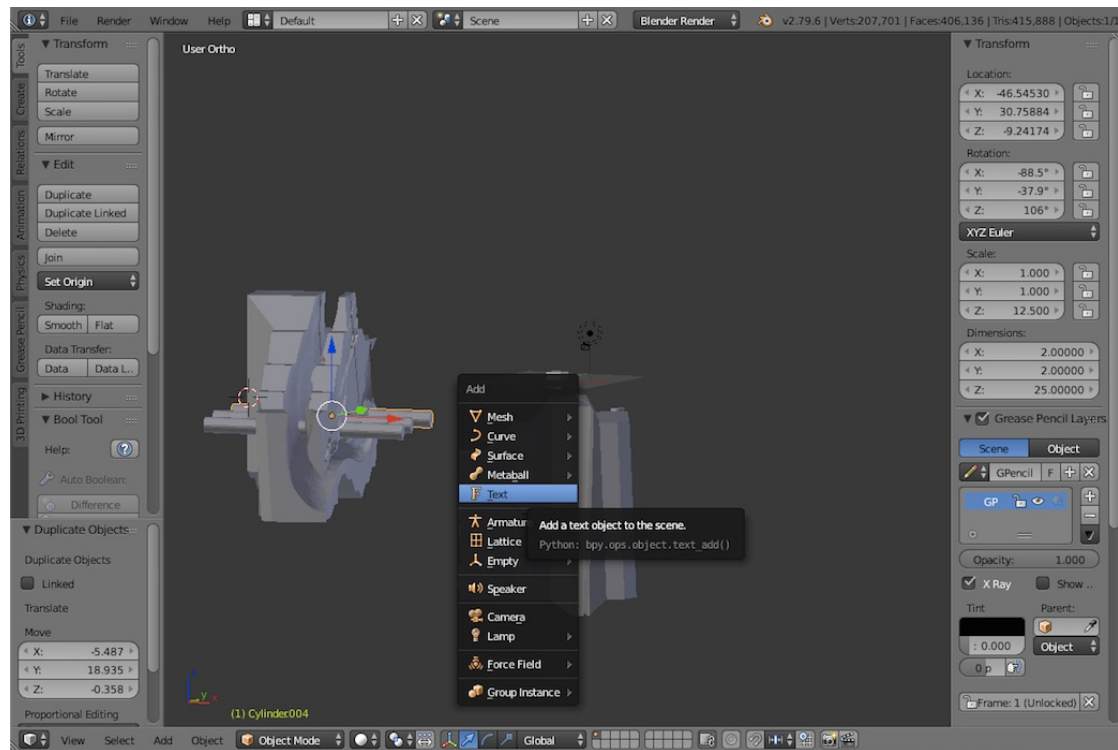
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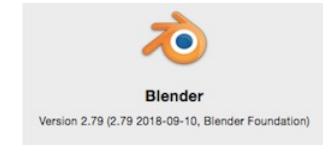
Cutting guides – Labelling



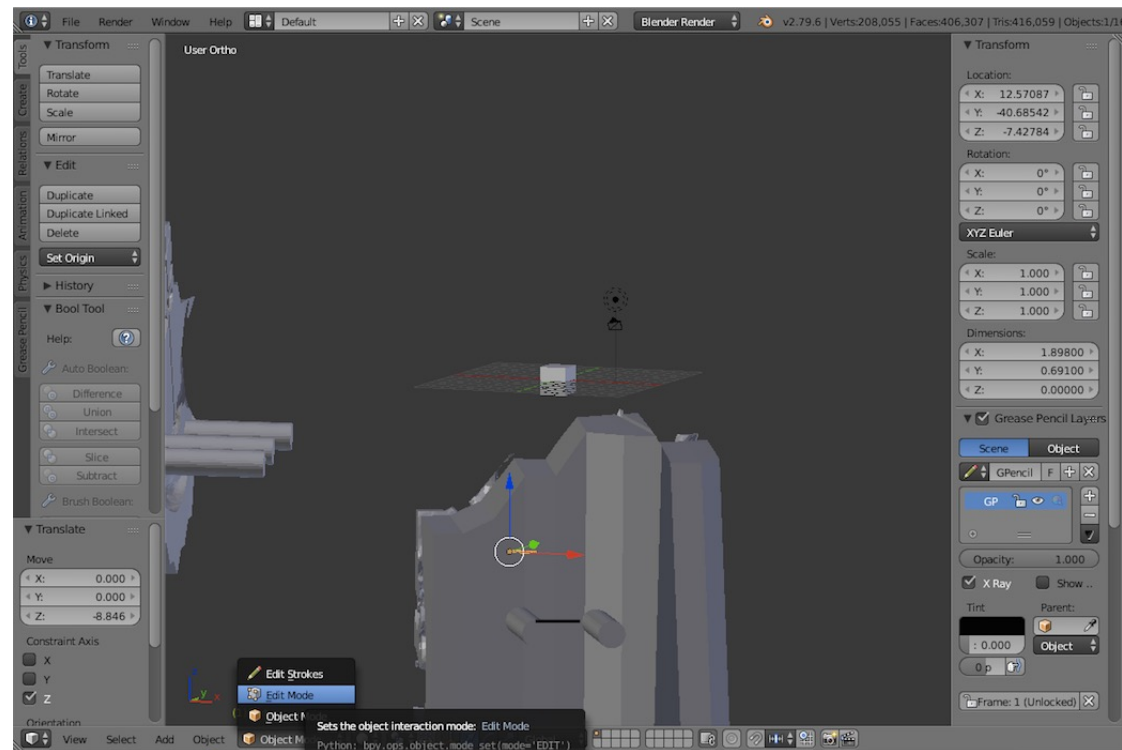
- Shift+A – Text
- *Edit Mode*: Modify text
- Extrude
- Position
- Transform Text into Mesh:
 - Alt+C – *Curves into Mesh*
- Boolean: Difference guide-text mesh



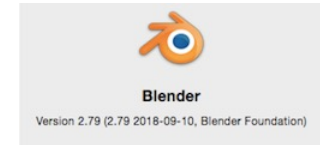
Cutting guides – Labelling



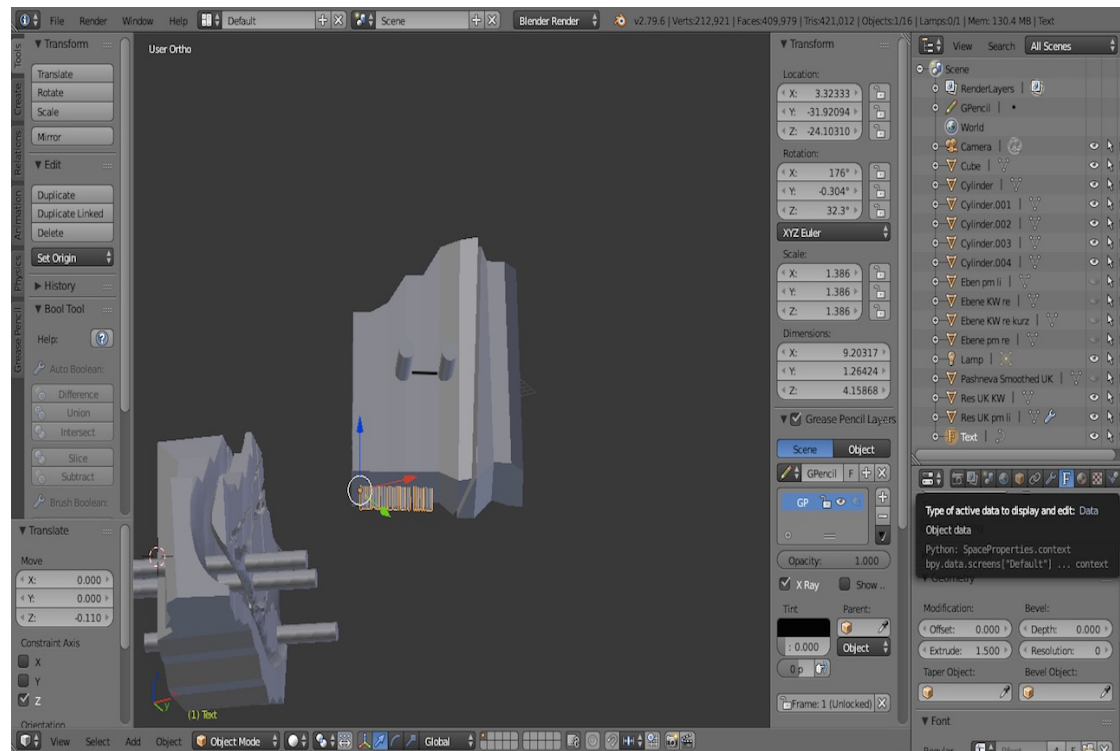
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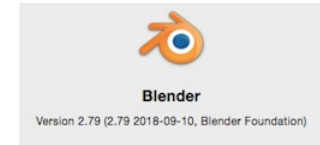
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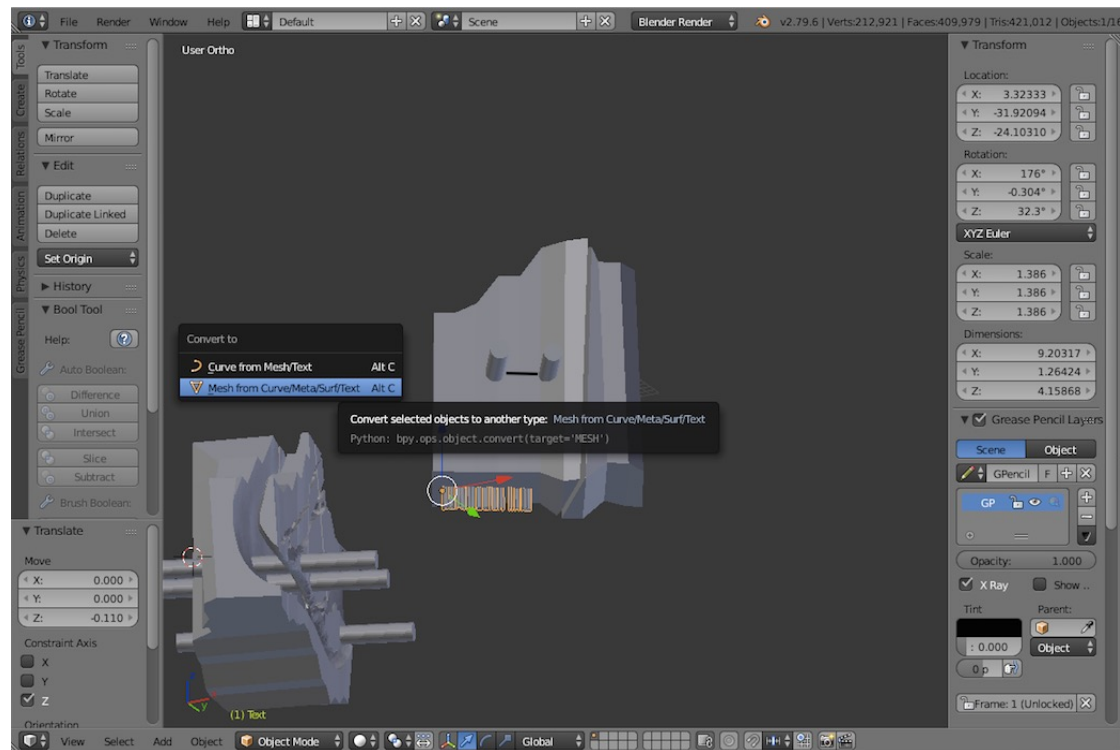
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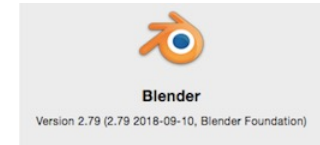
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