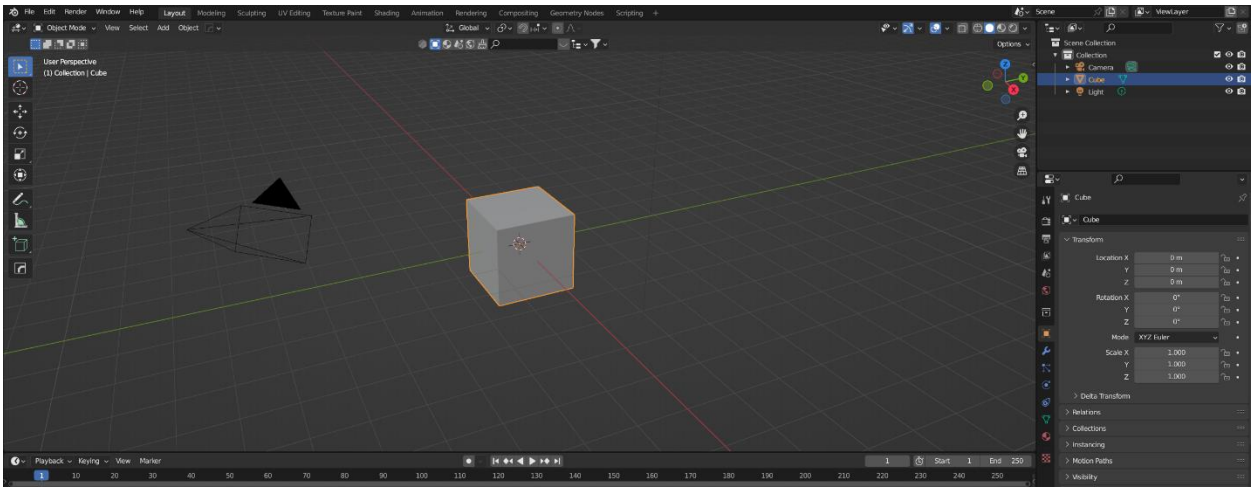
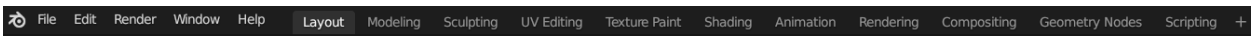
Chapter 1: Modeling the 3D Asset

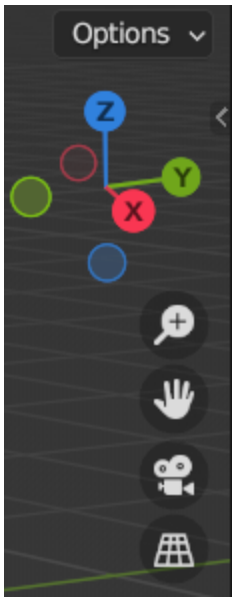
Bad reference Good reference

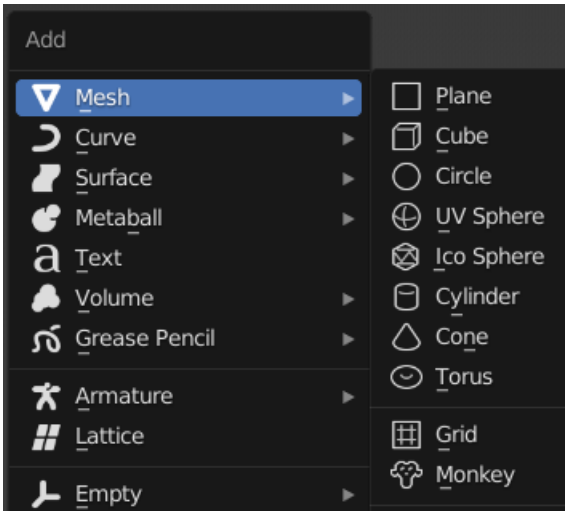
Under exposed Good exposure Over exposed

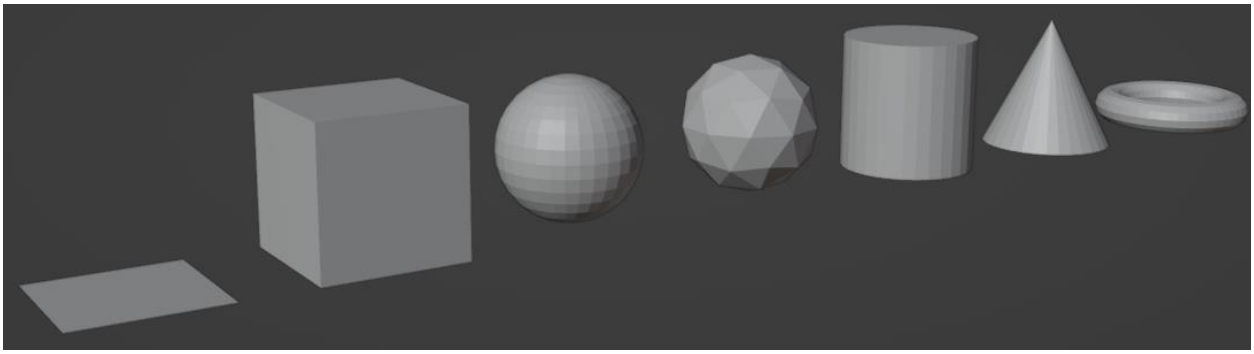

File Edit Render Window Help
Layout Modeling Sculpting UV Editing Texture Paint Shading Animation Rendering Compositing Geometry Nodes Scripting
Object Mode View Select Add Object
Global
Options
User Perspective
(1) Collection | Cube
Scene
ViewLayer
Scene Collection
Collection
Camera
Cube
Light
Cube
Cube
Transform
Location X 0 m
Y 0 m
Z 0 m
Rotation X 0°
Y 0°
Z 0°
Mode XYZ Euler
Scale X 1.000
Y 1.000
Z 1.000
Delta Transform
Relations
Collections
Instancing
Motion Paths
Visibility
Playback Keying View Marker
Start 1
End 250

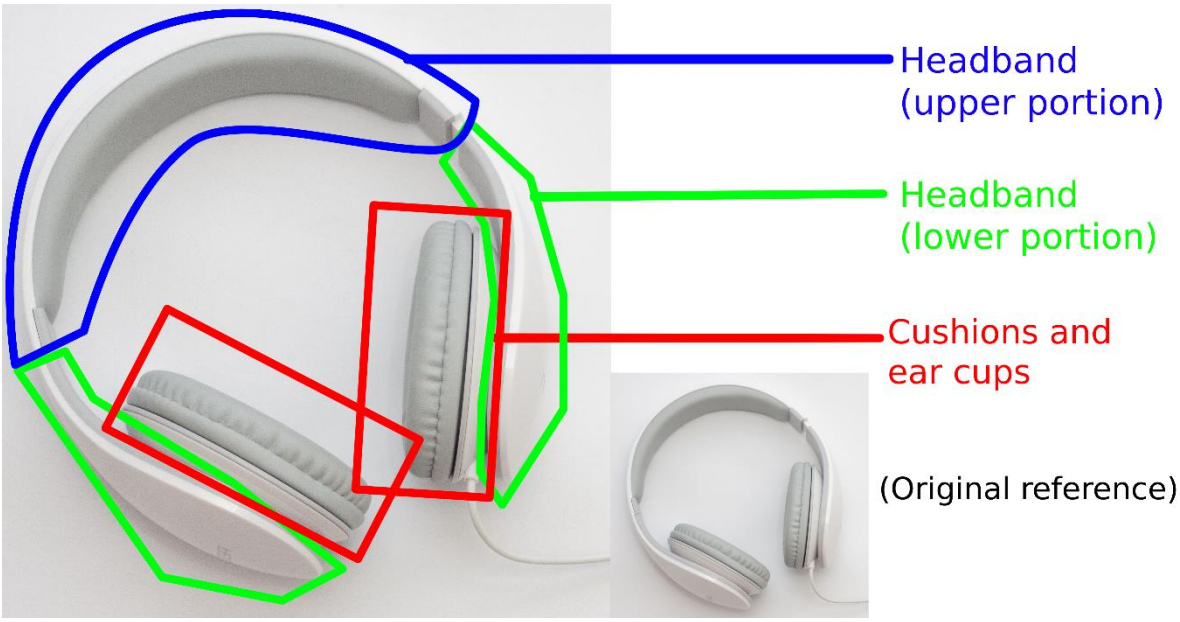

File Edit Render Window Help
Layout Modeling Sculpting UV Editing Texture Paint Shading Animation Rendering Compositing Geometry Nodes Scripting

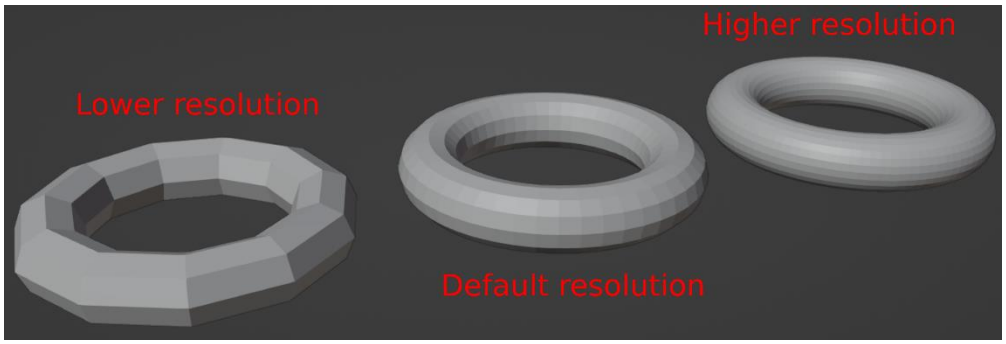
User Perspective
(1) Collection | Cube

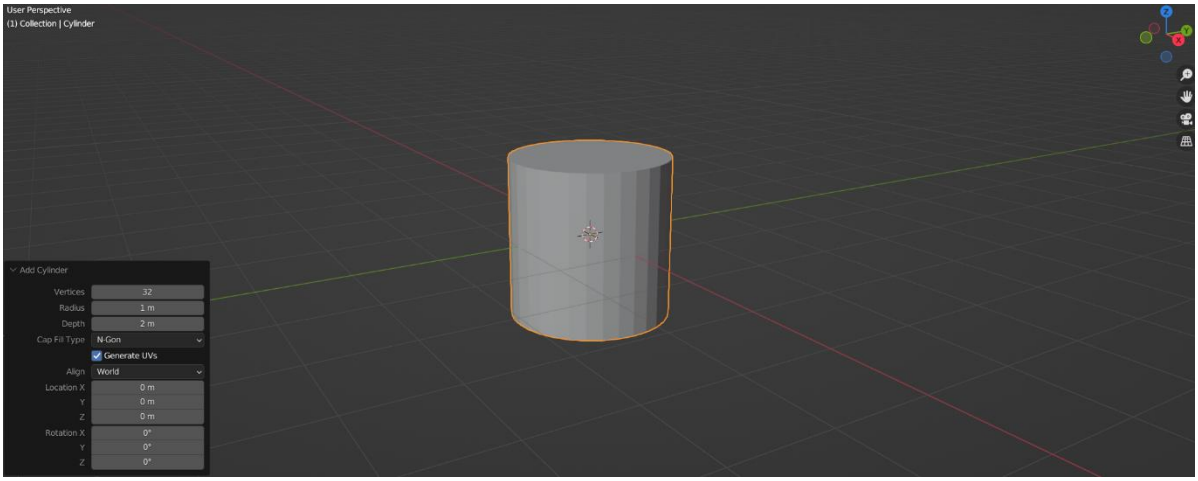

Options
Z
Y
X

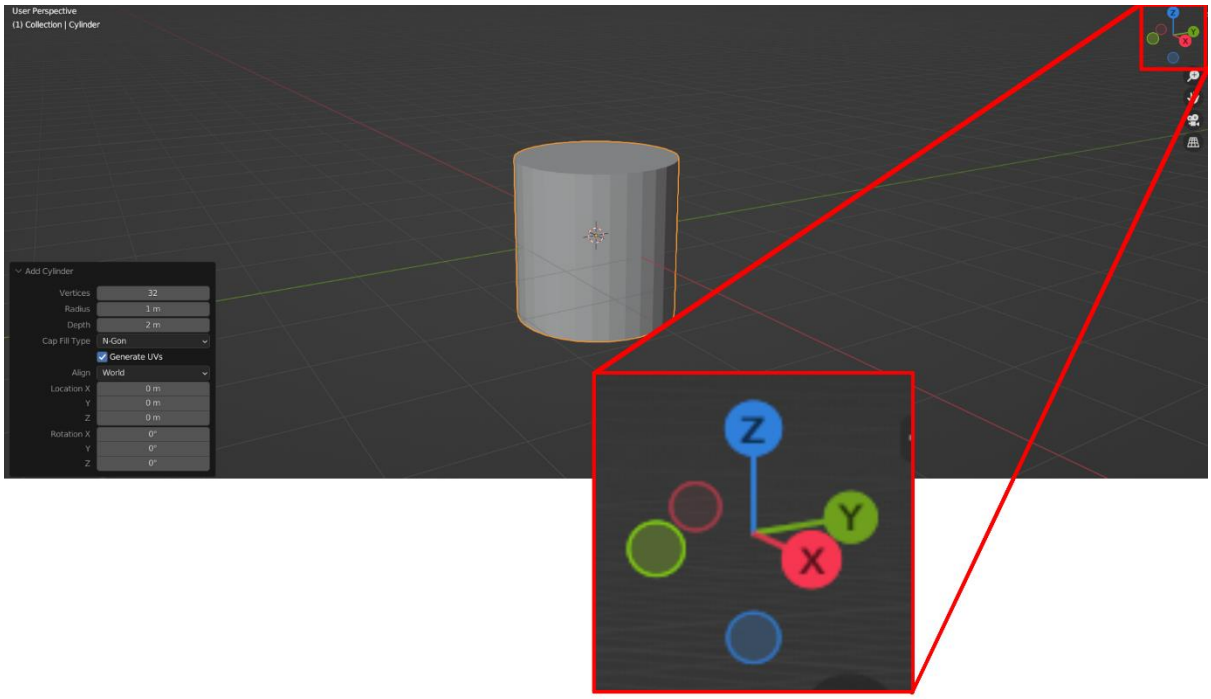

Add
Mesh
Curve
Surface
Metaball
Text
Volume
Grease Pencil
Armature
Lattice
Empty
Plane
Cube
Circle
UV Sphere
Ico Sphere
Cylinder
Cone
Torus
Grid
Monkey

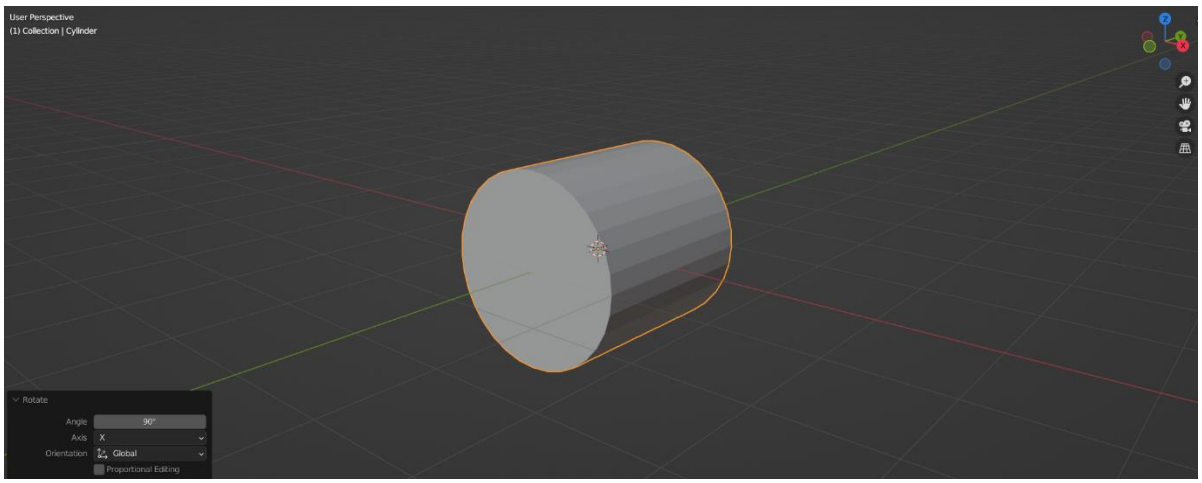


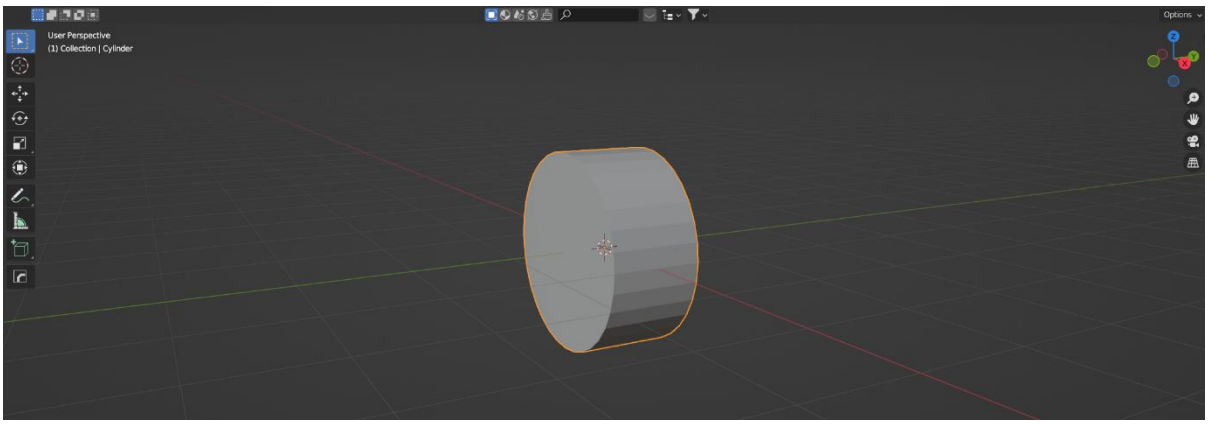

Headband
(upper portion)
Headband
(lower portion)
Cushions and
ear cups
(Original reference)

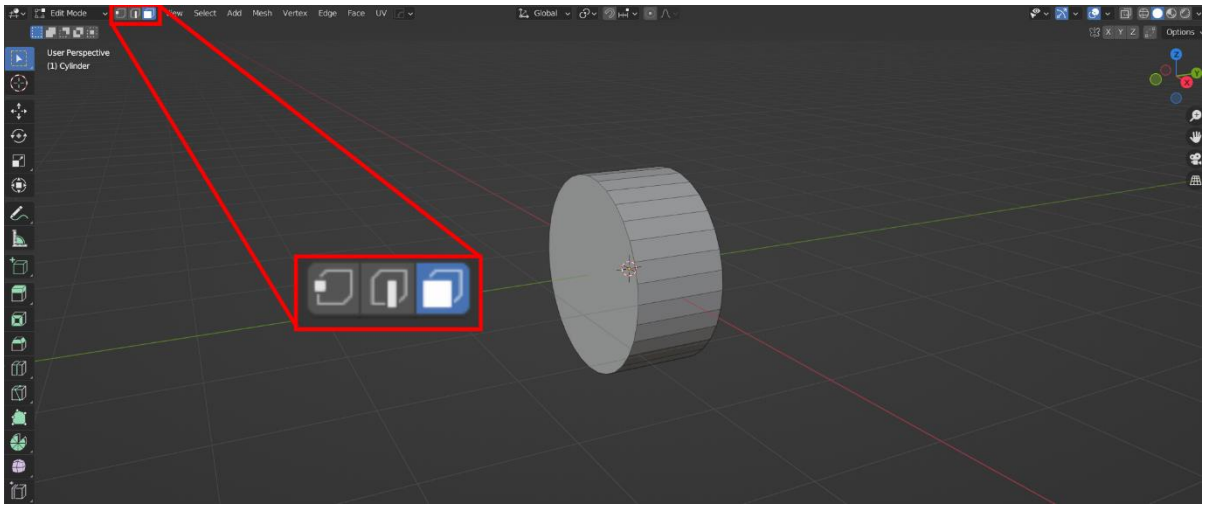

Higher resolution
Lower resolution
Default resolution

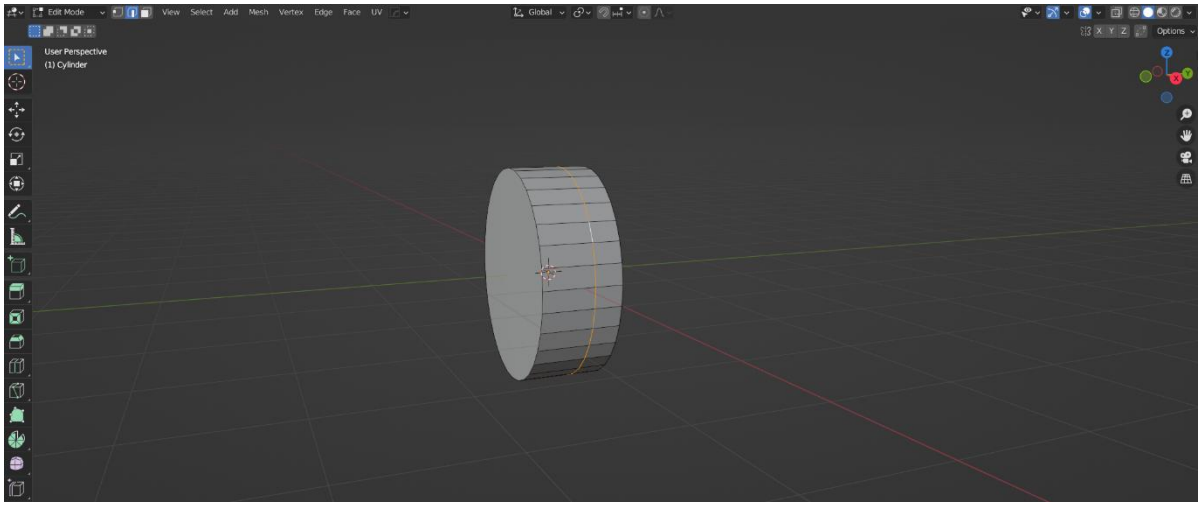

User Perspective
(1) Collection | Cylinder
Add Cylinder
Vertices 32
Radius 1 m
Depth 2 m
Cap Fill Type N-Gon
Generate UVs
Align World
Location X 0 m
Y 0 m
Z 0 m
Rotation X 0°
Y 0°
Z 0°

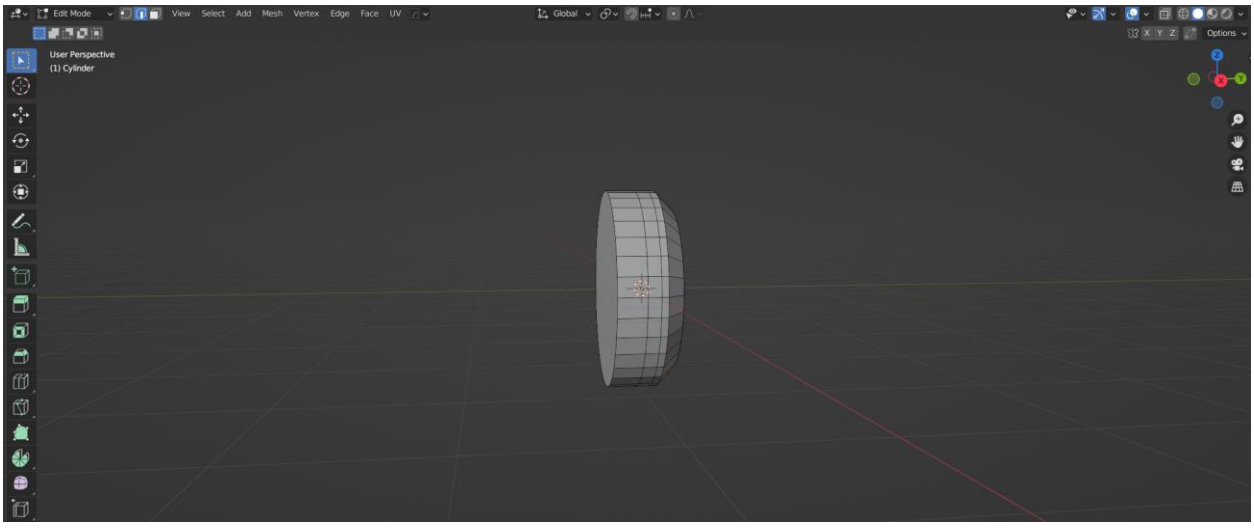

User Perspective
(1) Collection | Cylinder
Add Cylinder
Vertices 32
Radius 1 m
Depth 2 m
Cap Fill Type N-Gon
Generate UVs
Align World
Location X 0 m
Y 0 m
Z 0 m
Rotation X 0°
Y 0°
Z 0°
Z
Y
X

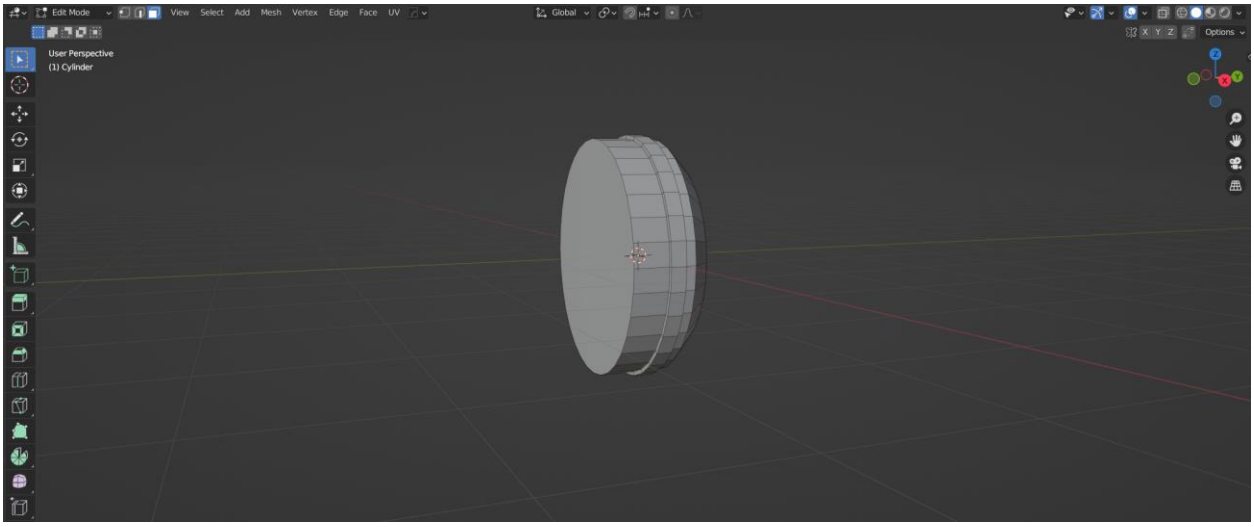

User Perspective
(1) Collection | Cylinder
Rotate
Angle 90°
Axis X
Orientation Global
Proportional Editing

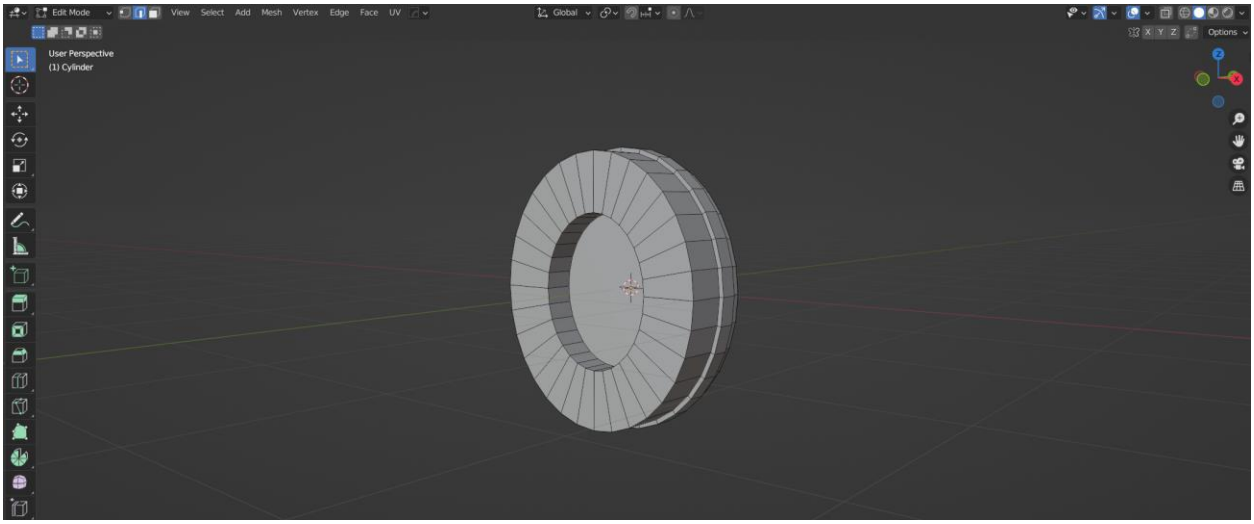

User Perspective
(1) Collection | Cylinder
Options

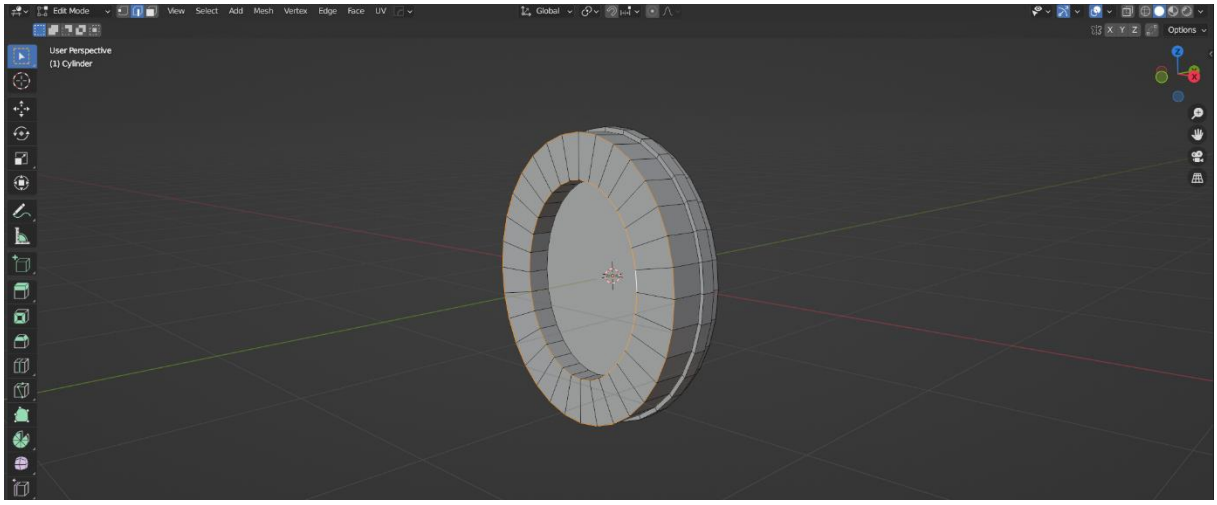

Edit Mode
View
Select
Add
Mesh
Vertex
Edge
Face
UV
Global
Options
User Perspective
(1) Cylinder


Edit Mode
View
Select
Add
Mesh
Vertex
Edge
Face
UV
Global
Options
User Perspective
(1) Cylinder

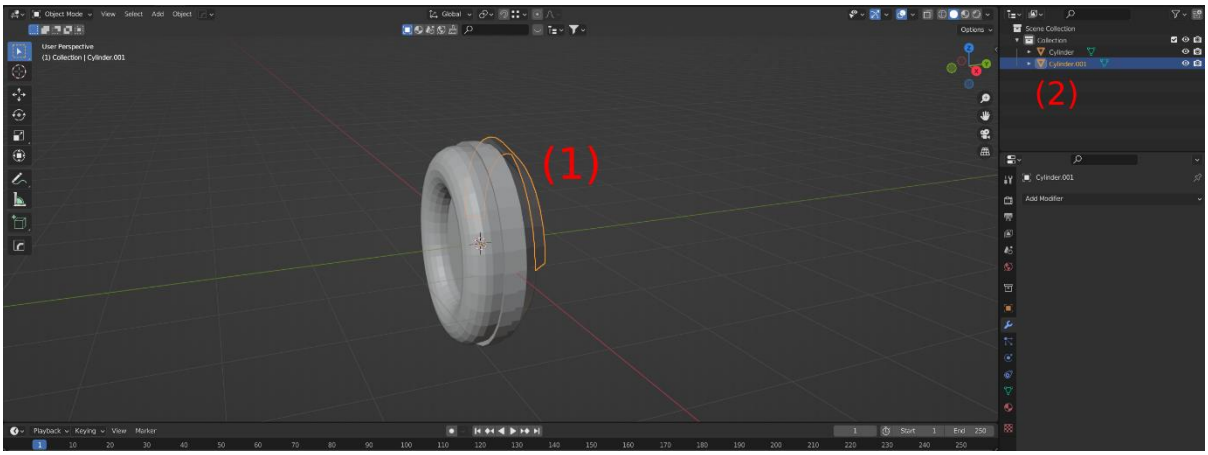

Edit Mode
View
Select
Add
Mesh
Vertex
Edge
Face
UV
Global
Options
User Perspective
(1) Cylinder

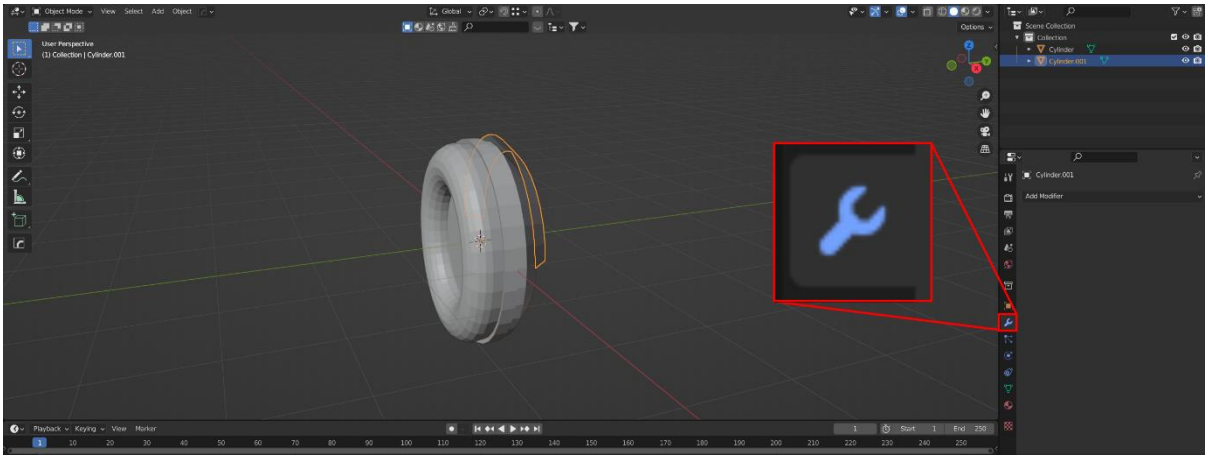

Edit Mode
View
Select
Add
Mesh
Vertex
Edge
Face
UV
Global
Options
User Perspective
(1) Cylinder

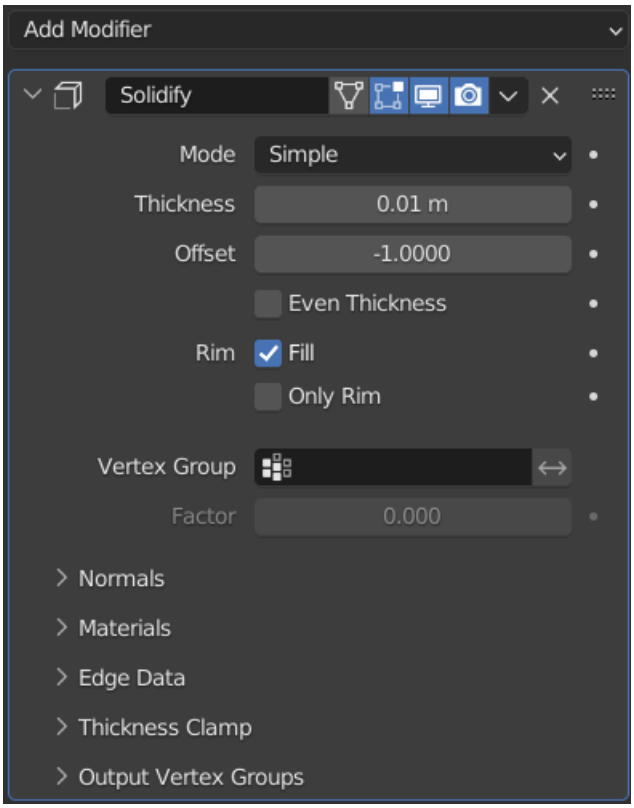

Edit Mode
View
Select
Add
Mesh
Vertex
Edge
Face
UV
Global
Options
User Perspective
(1) Cylinder


Edit Mode
View
Select
Add
Mesh
Vertex
Edge
Face
UV
Global
Options
User Perspective
(1) Cylinder

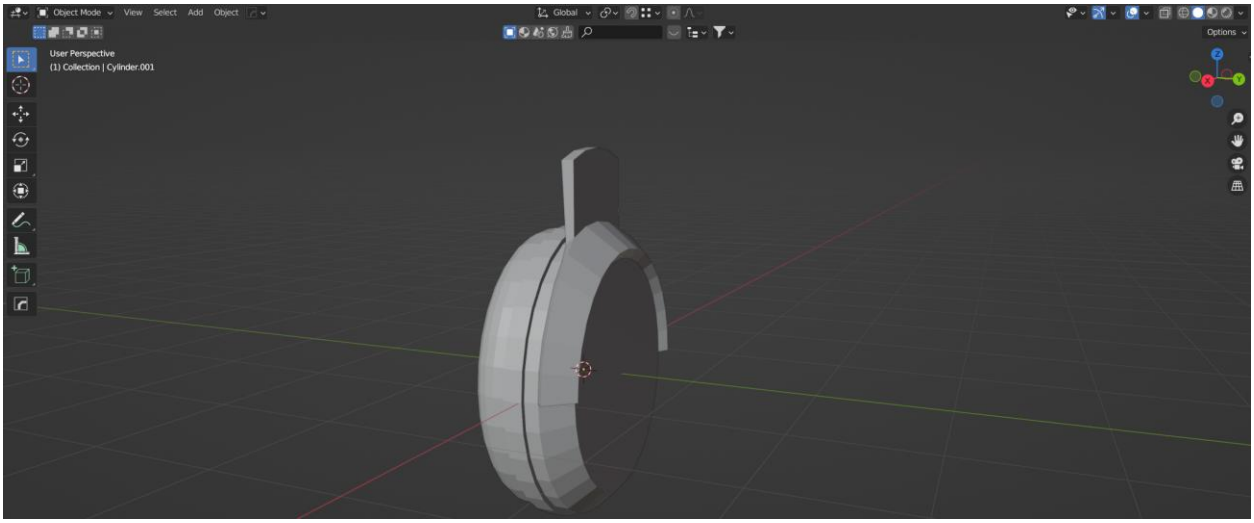
Object Mode
View
Select
Add
Object
Global
Options
User Perspective
(1) Collection | Cylinder

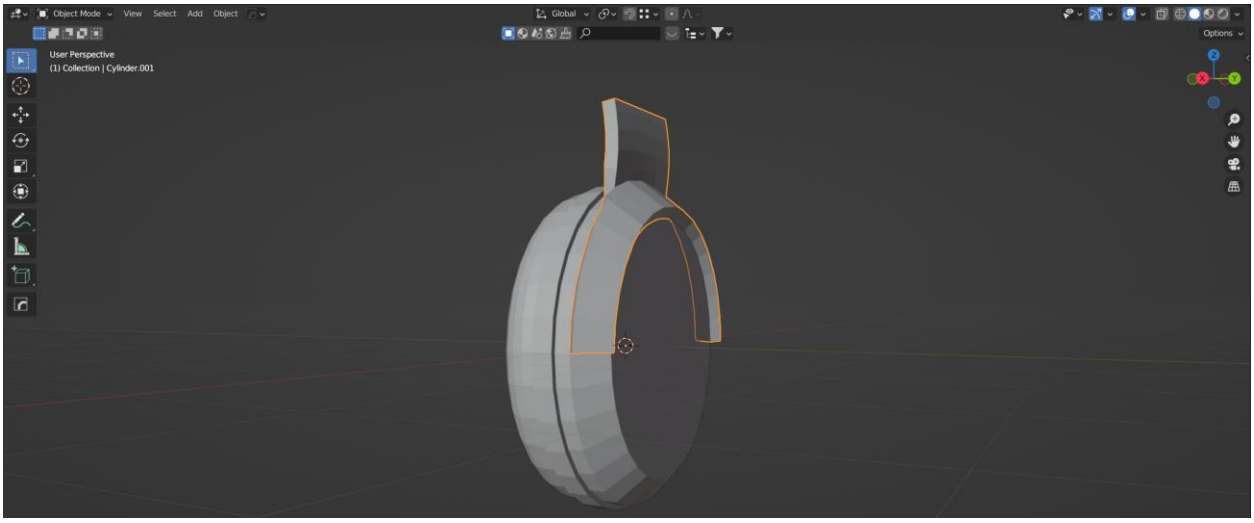

Object Mode
View
Select
Add
Object
Global
Options
User Perspective
(1) Collection | Cylinder.001
(1)
(2)
Scene Collection
Collection
Cylinder
Cylinder.001
Add Modifier
Playback
Keying
View
Marker
Start
End

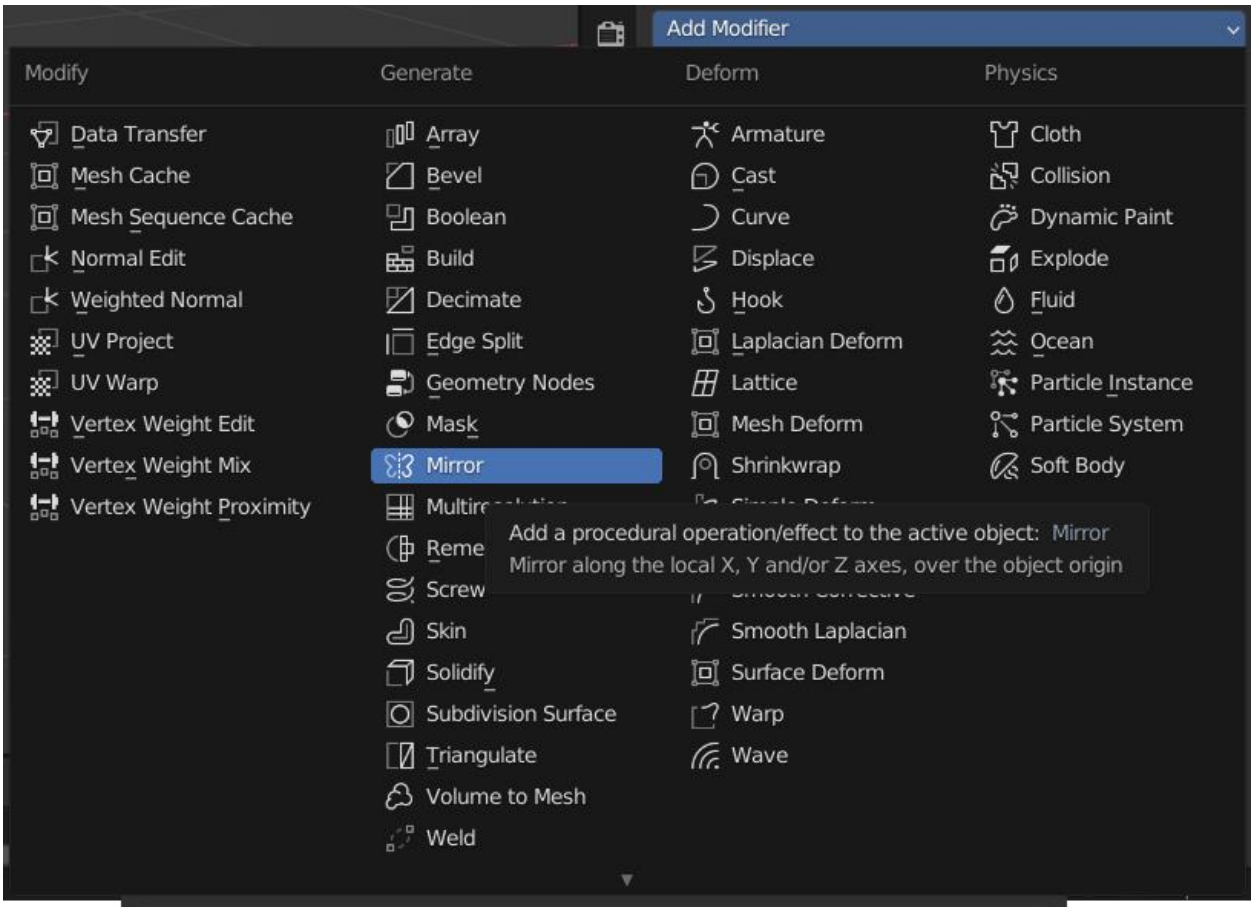


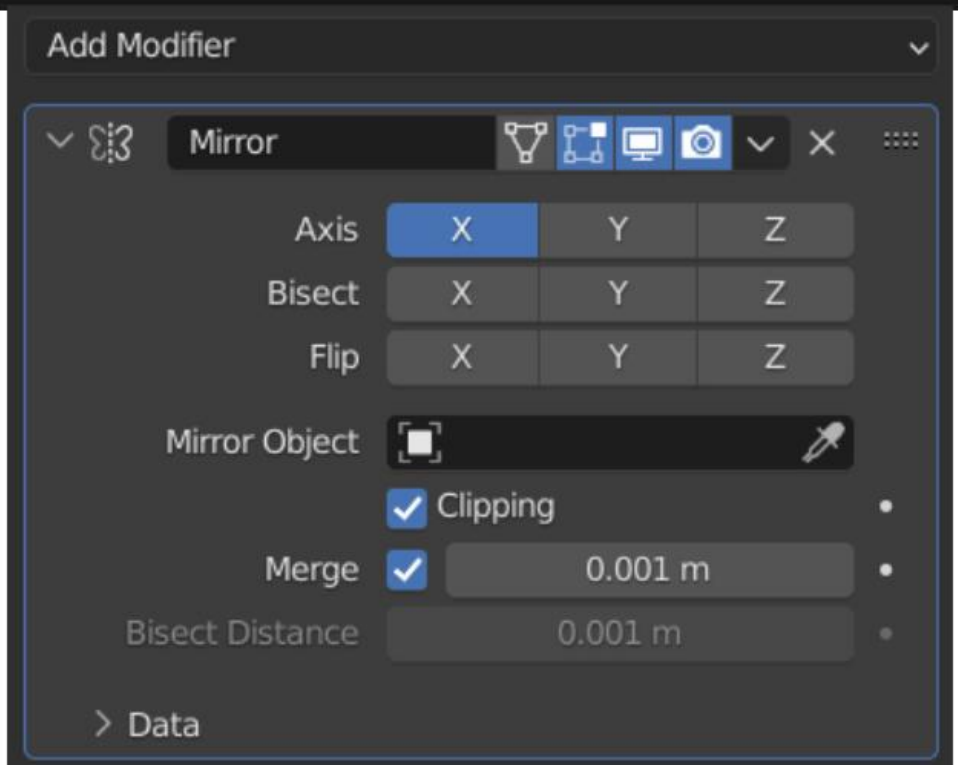

Add Modifier
Solidify
Mode
Simple
Thickness
0.01 m
Offset
-1.0000
Even Thickness
Rim
Fill
Only Rim
Vertex Group
Factor
0.000
Normals
Materials
Edge Data
Thickness Clamp
Output Vertex Groups

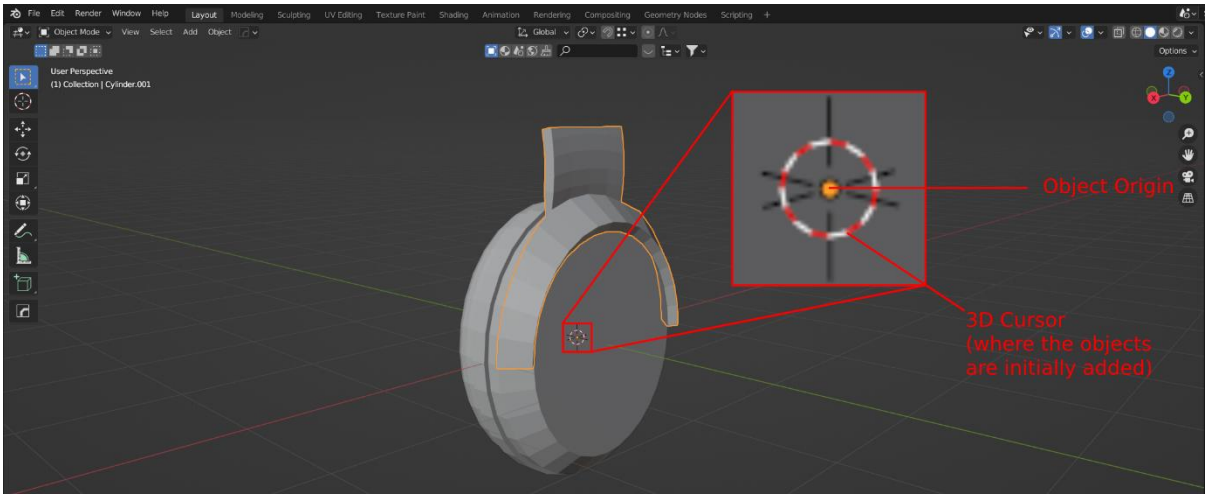
Object Mode
View
Select
Add
Object
Global
Options
User Perspective
(1) Collection | Cylinder.001
Before Solidifying
After Solidifying

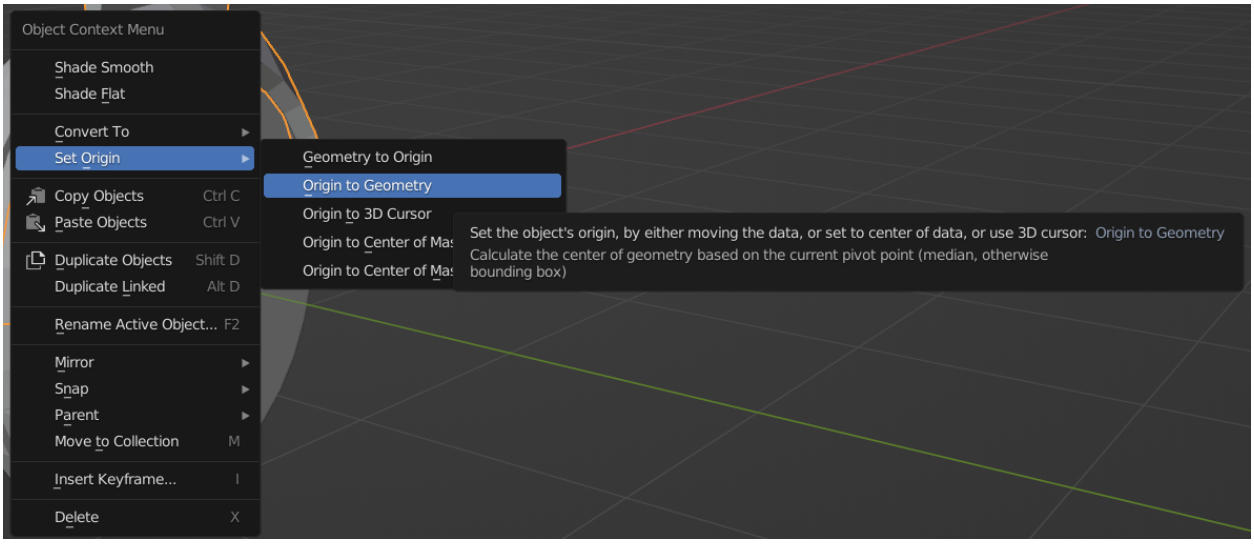

Object Mode
View
Select
Add
Object
Global
Options
User Perspective
(1) Collection | Cylinder.001

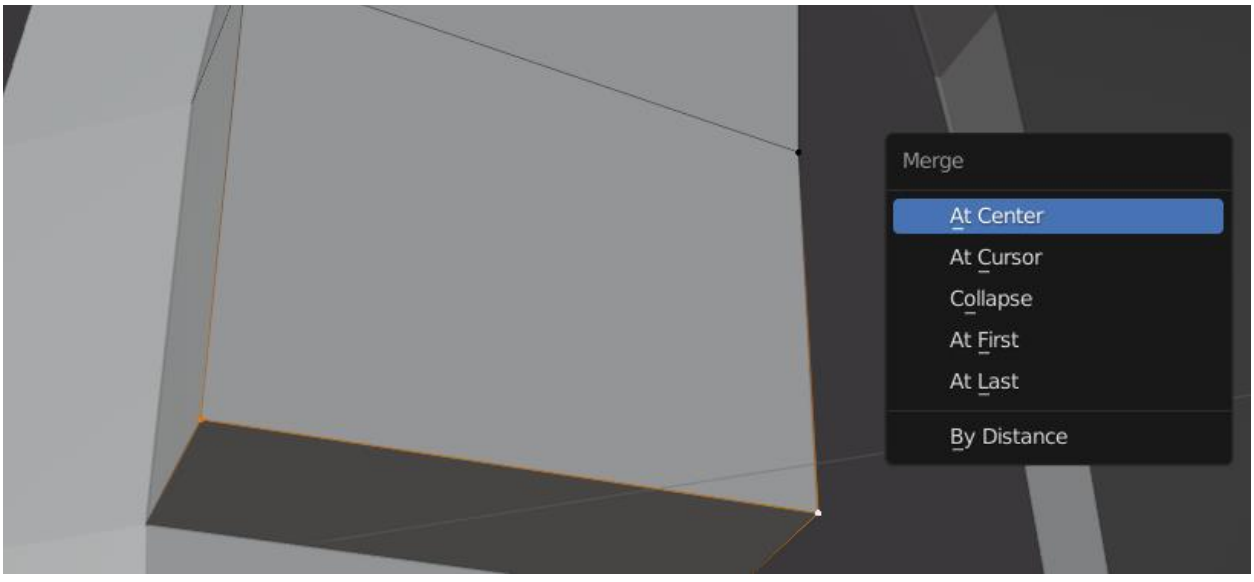

Object Mode
View
Select
Add
Object
Global
Options
User Perspective
(1) Collection | Cylinder.001

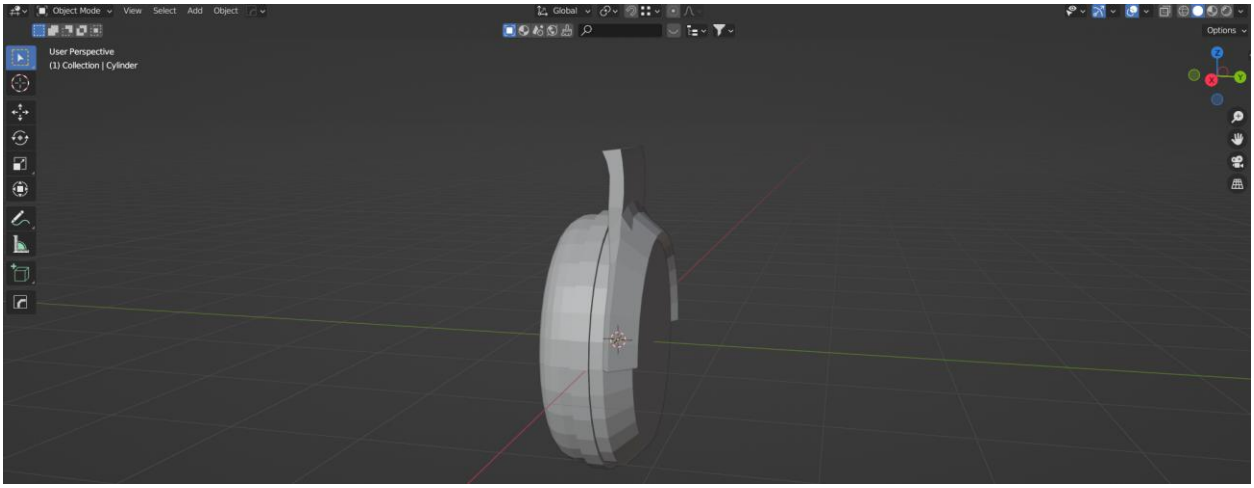

Add Modifier
Modify
Generate
Deform
Physics
Data Transfer
Mesh Cache
Mesh Sequence Cache
Normal Edit
Weighted Normal
UV Project
UV Warp
Vertex Weight Edit
Vertex Weight Mix
Vertex Weight Proximity
Array
Bevel
Boolean
Build
Decimate
Edge Split
Geometry Nodes
Mask
Mirror
Screw
Skin
Solidify
Subdivision Surface
Triangulate
Volume to Mesh
Weld
Armature
Cast
Curve
Displace
Hook
Laplacian Deform
Lattice
Mesh Deform
Shrinkwrap
Smooth Laplacian
Surface Deform
Warp
Wave
Cloth
Collision
Dynamic Paint
Explode
Fluid
Ocean
Particle Instance
Particle System
Soft Body
Add a procedural operation/effect to the active object: Mirror
Mirror along the local X, Y and/or Z axes, over the object origin

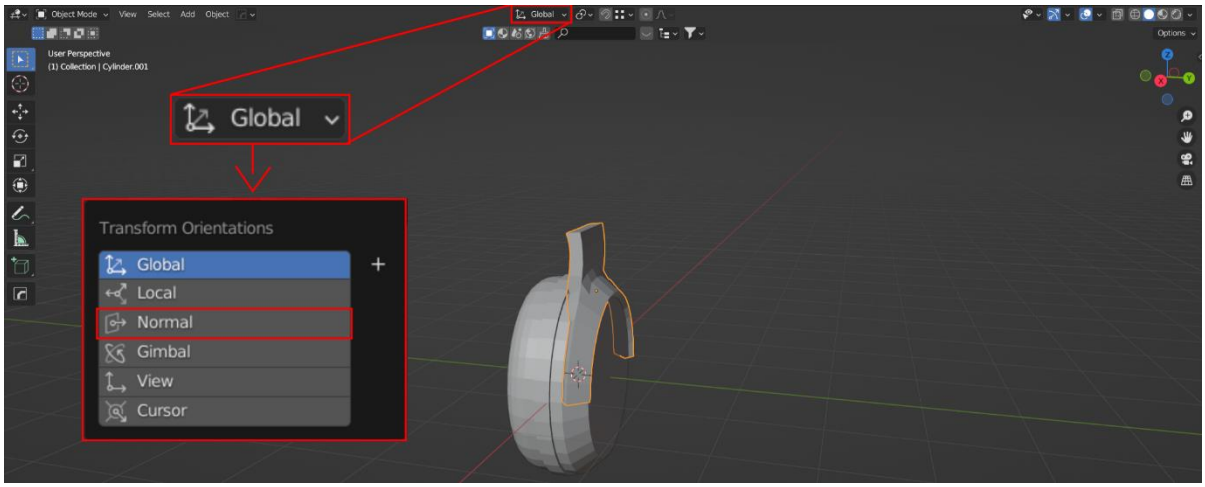

Add Modifier
Mirror
Axis
X
Y
Z
Bisect
X
Y
Z
Flip
X
Y
Z
Mirror Object
Clipping
Merge
0.001 m
Bisect Distance
0.001 m
Data

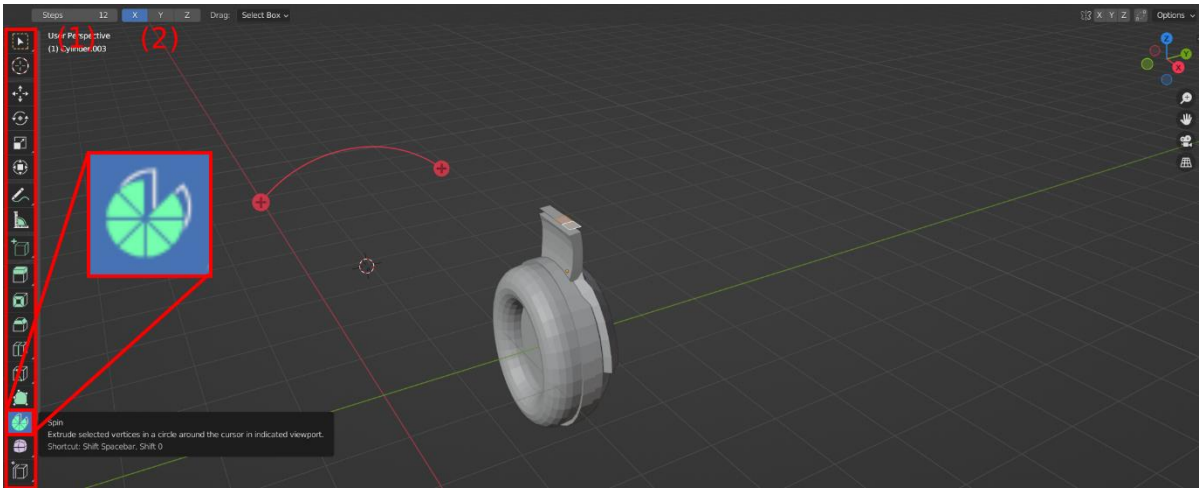

Object Origin
3D Cursor
(where the objects
are initially added)

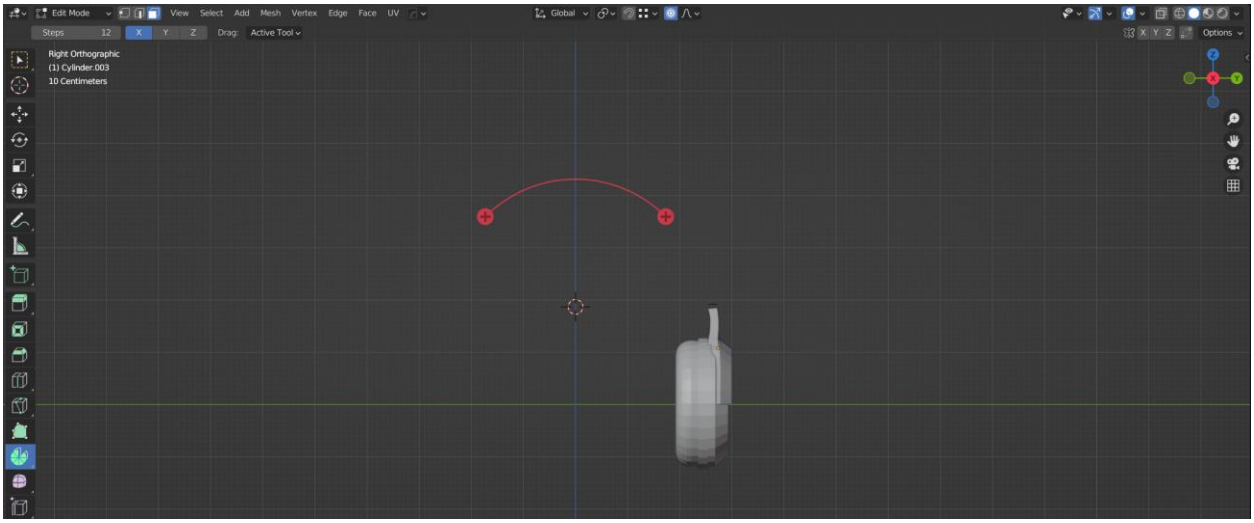

Object Context Menu
Shade Smooth
Shade Flat
Convert To
Set Origin
Copy Objects Ctrl C
Paste Objects Ctrl V
Duplicate Objects Shift D
Duplicate Linked Alt D
Rename Active Object... F2
Mirror
Snap
Parent
Move to Collection M
Insert Keyframe... I
Delete X
Geometry to Origin
Origin to Geometry
Origin to 3D Cursor
Origin to Center of Mas
Origin to Center of Mas
Set the object's origin, by either moving the data, or set to center of data, or use 3D cursor: Origin to Geometry
Calculate the center of geometry based on the current pivot point (median, otherwise
bounding box)

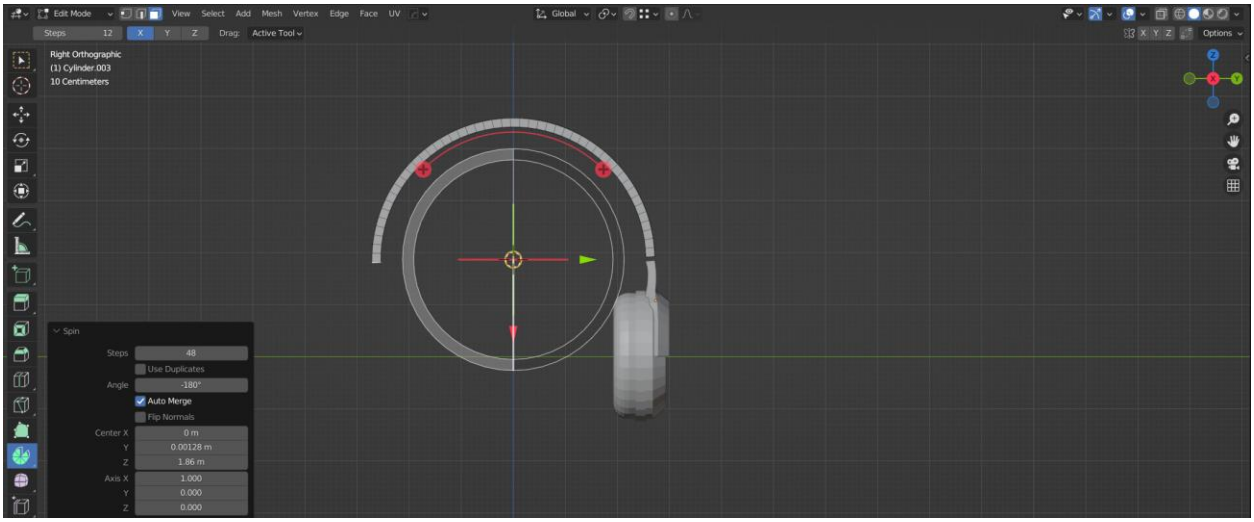

Merge
At Center
At Cursor
Collapse
At First
At Last
By Distance

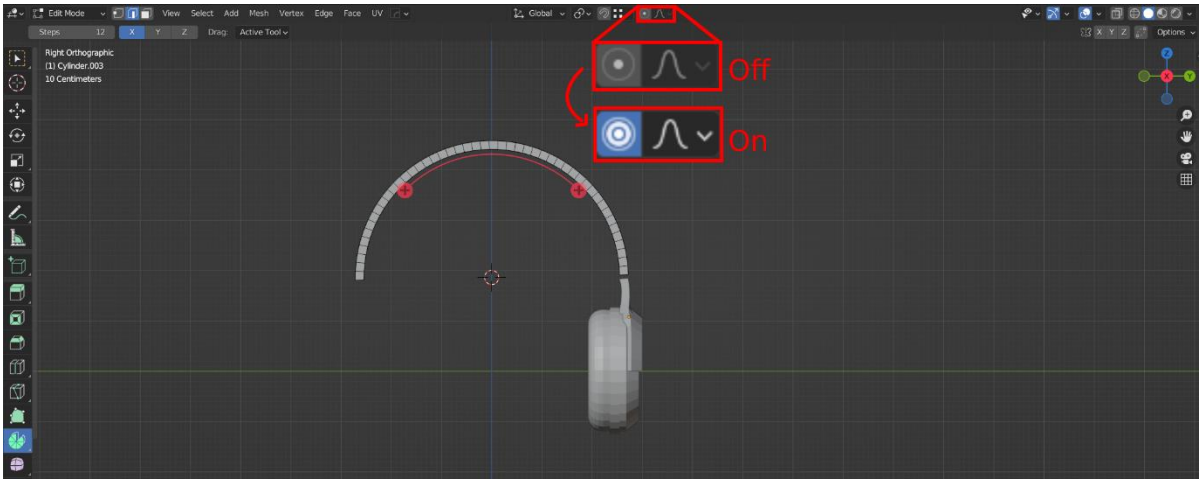

Object Mode
View
Select
Add
Object
Global
Options
User Perspective
(1) Collection | Cylinder

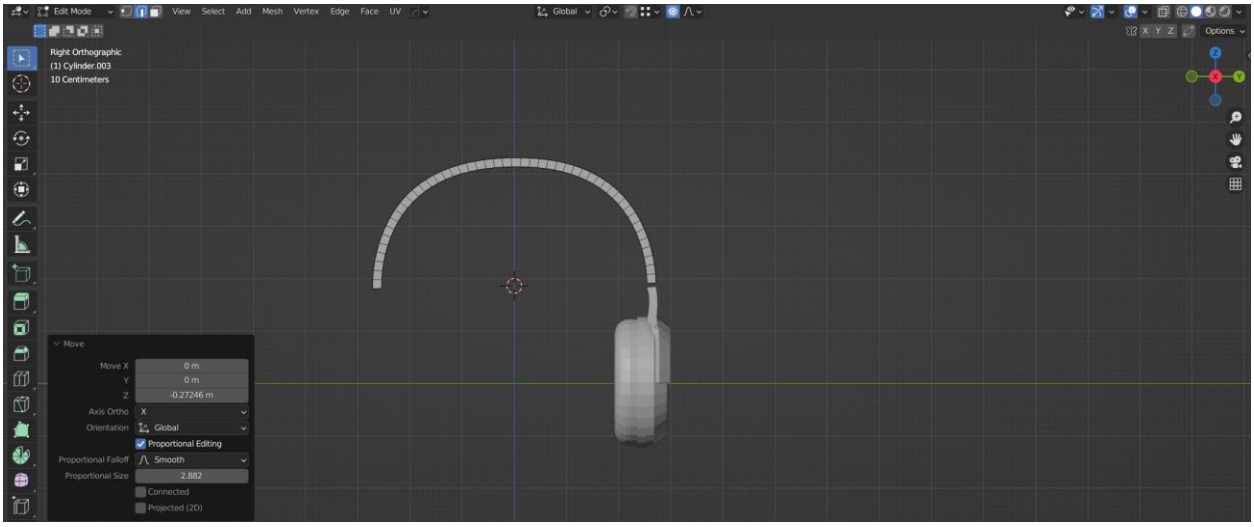

Object Mode
View
Select
Add
Object
Global
Options
User Perspective
(1) Collection | Cylinder.001
Global
Transform Orientations
Global
Local
Normal
Gimbal
View
Cursor

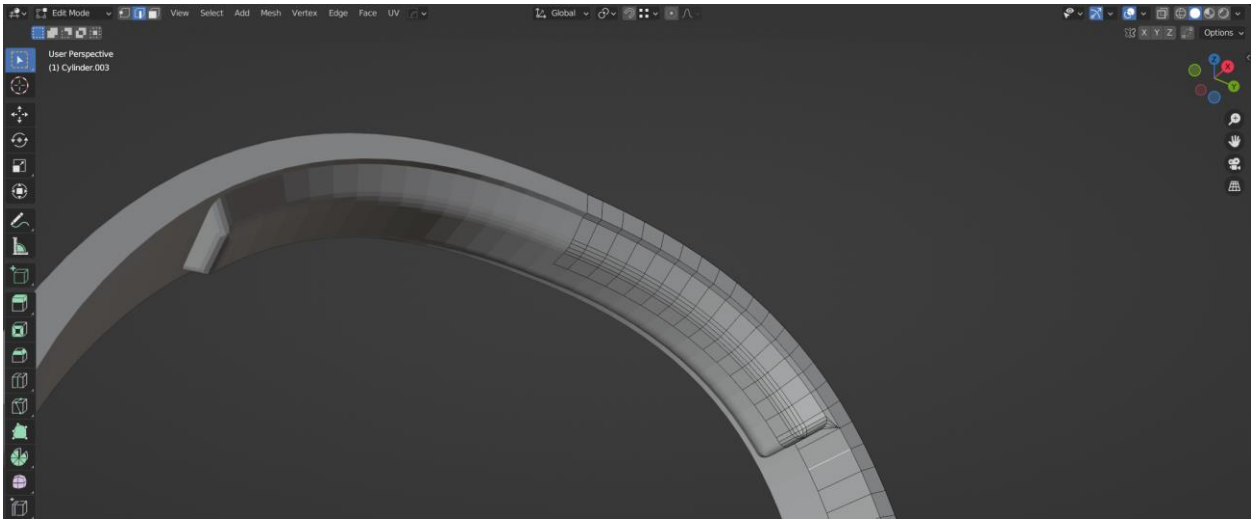

Steps
12
X
Y
Z
Drag:
Select Box
Options
User Perspective
(1) Cylinder.003
(1)
(2)
Spin
Extrude selected vertices in a circle around the cursor in indicated viewport.
Shortcut: Shift Spacebar, Shift 0

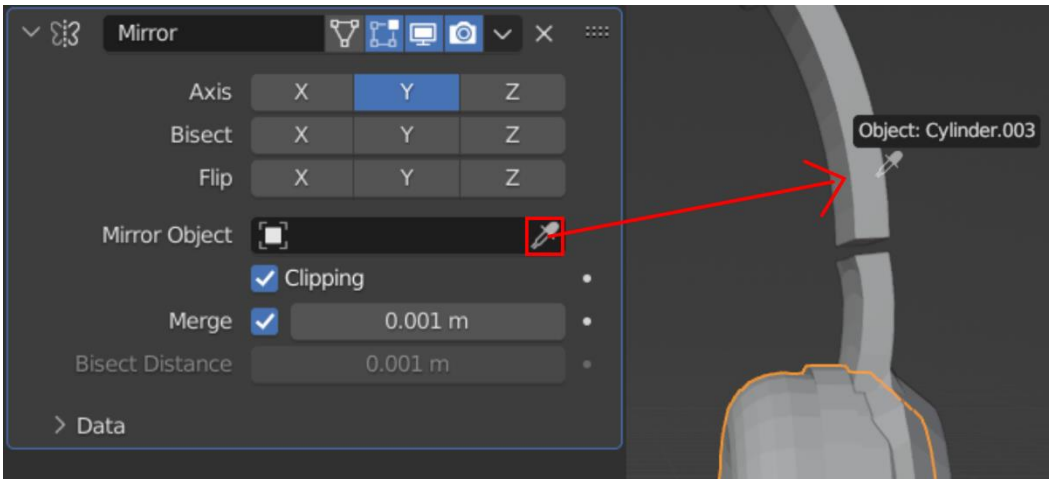

Edit Mode
View Select Add Mesh Vertex Edge Face UV
Global
Steps 12
X Y Z
Drag: Active Tool
Options
Right Orthographic
(1) Cylinder.003
10 Centimeters


Edit Mode
View Select Add Mesh Vertex Edge Face UV
Global
Steps 12
X Y Z
Drag: Active Tool
Options
Right Orthographic
(1) Cylinder.003
10 Centimeters
Spin
Steps 48
Use Duplicates
Angle -180°
Auto Merge
Flip Normals
Center X 0 m
Y 0.00128 m
Z 1.86 m
Axis X 1.000
Y 0.000
Z 0.000


Edit Mode
View Select Add Mesh Vertex Edge Face UV
Global
Steps 12
X Y Z
Drag: Active Tool
Options
Right Orthographic
(1) Cylinder.003
10 Centimeters
Off
On

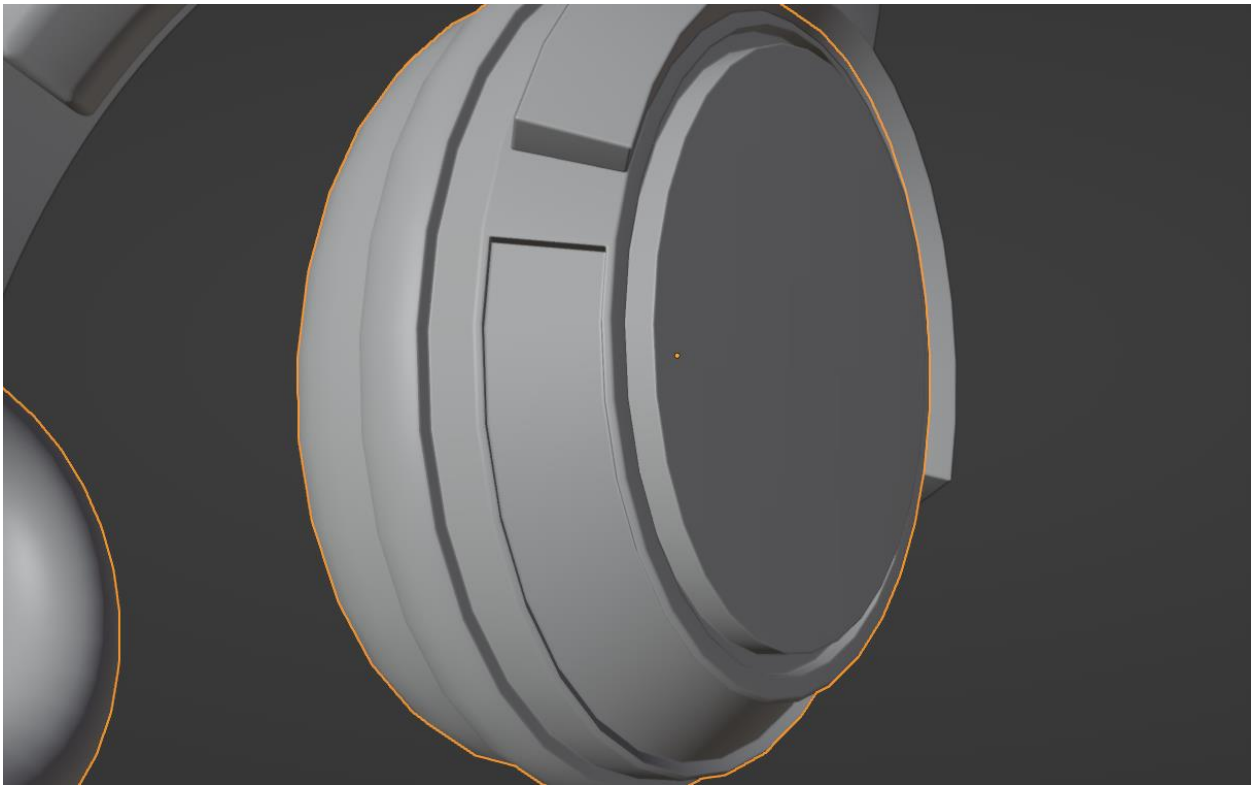

Edit Mode
View
Select
Add
Mesh
Vertex
Edge
Face
UV
Global
Options
Right Orthographic
(1) Cylinder.003
10 Centimeters
Move
Move X
0 m
Y
0 m
Z
-0.27246 m
Axis Ortho
X
Orientation
Global
Proportional Editing
Proportional Falloff
Smooth
Proportional Size
2.882
Connected
Projected (2D)

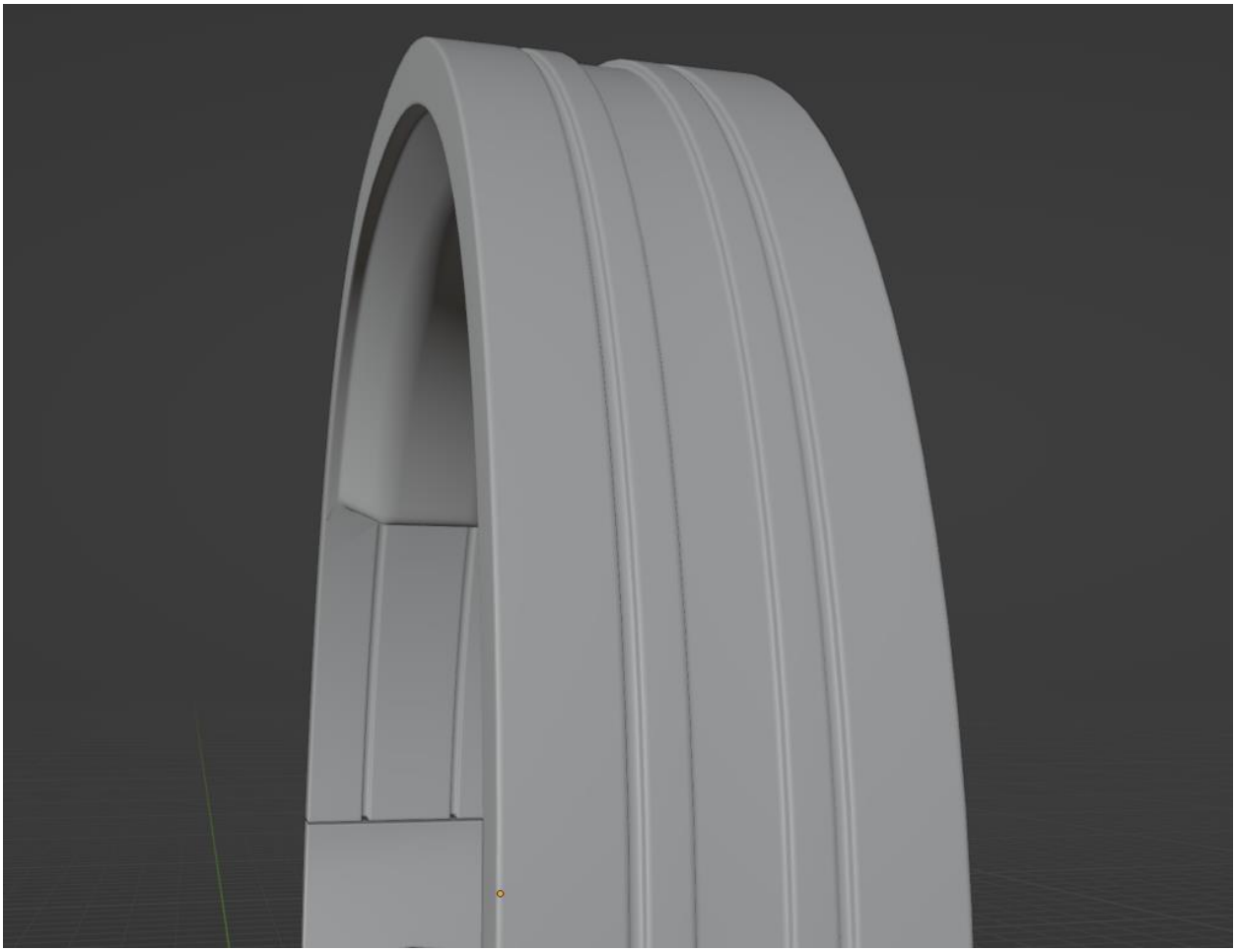

Edit Mode
View
Select
Add
Mesh
Vertex
Edge
Face
UV
Global
Options
User Perspective
(1) Cylinder.003

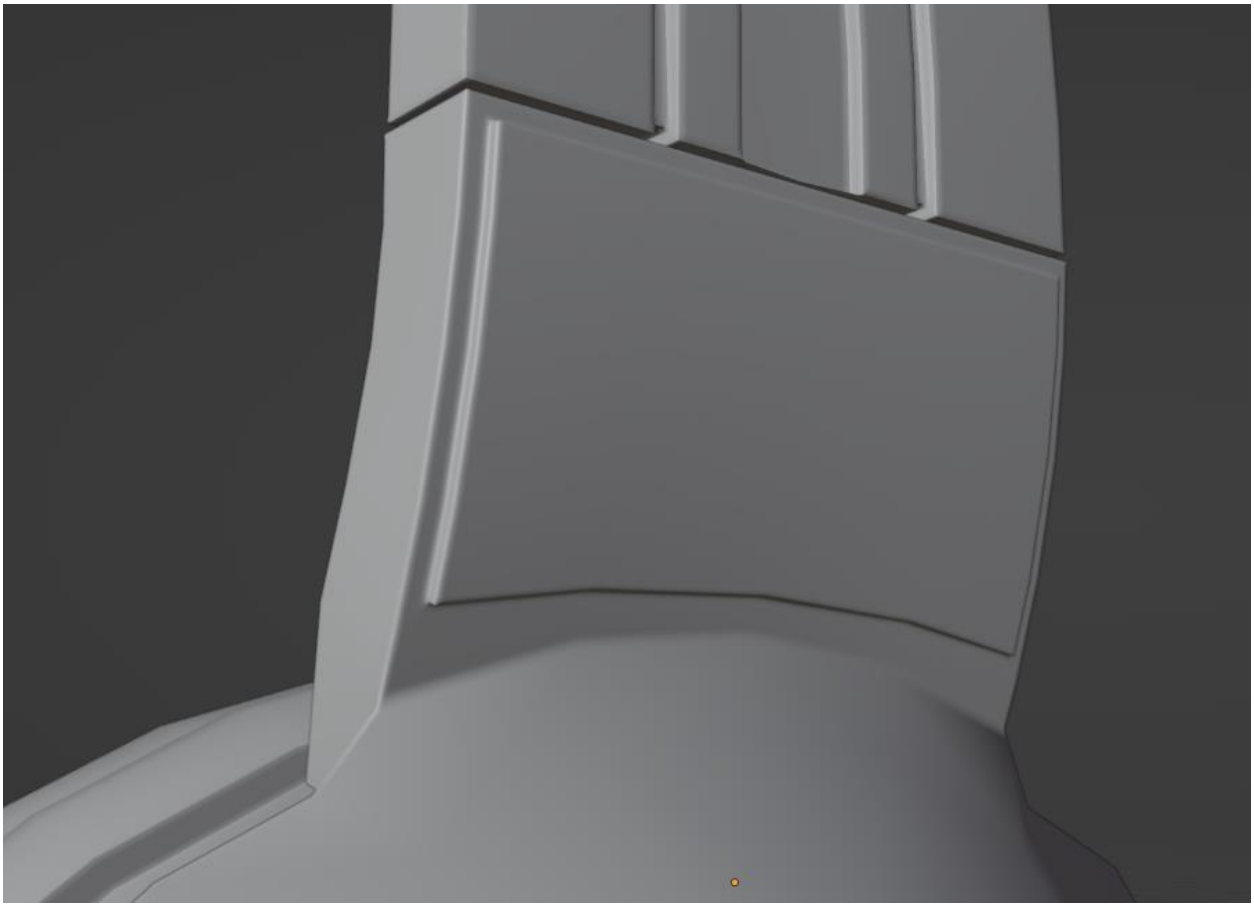

Mirror
Axis
X
Y
Z
Bisect
X
Y
Z
Flip
X
Y
Z
Mirror Object
Clipping
Merge
0.001 m
Bisect Distance
0.001 m
Data
Object: Cylinder.003

Object Mode
View
Select
Add
Object
Global
Options
User Perspective
(1) Collection | Cylinder.001

Object Mode
View
Select
Add
Object
Global
Options
User Perspective
(1) Collection | Cylinder.003

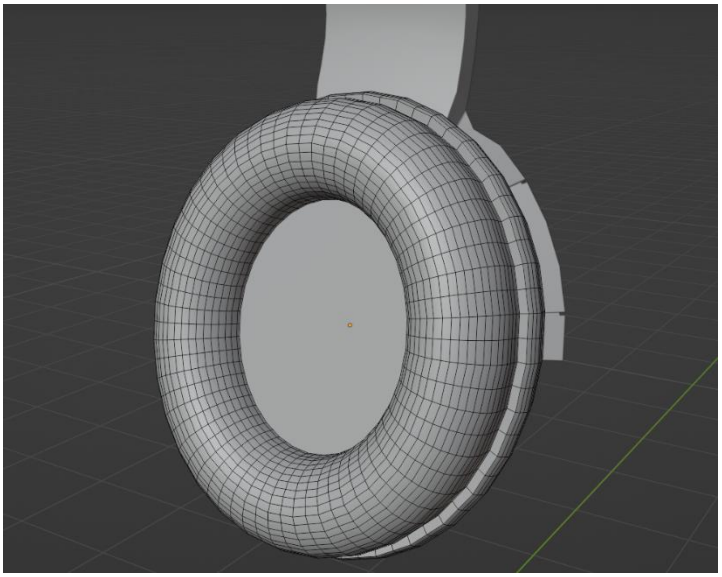


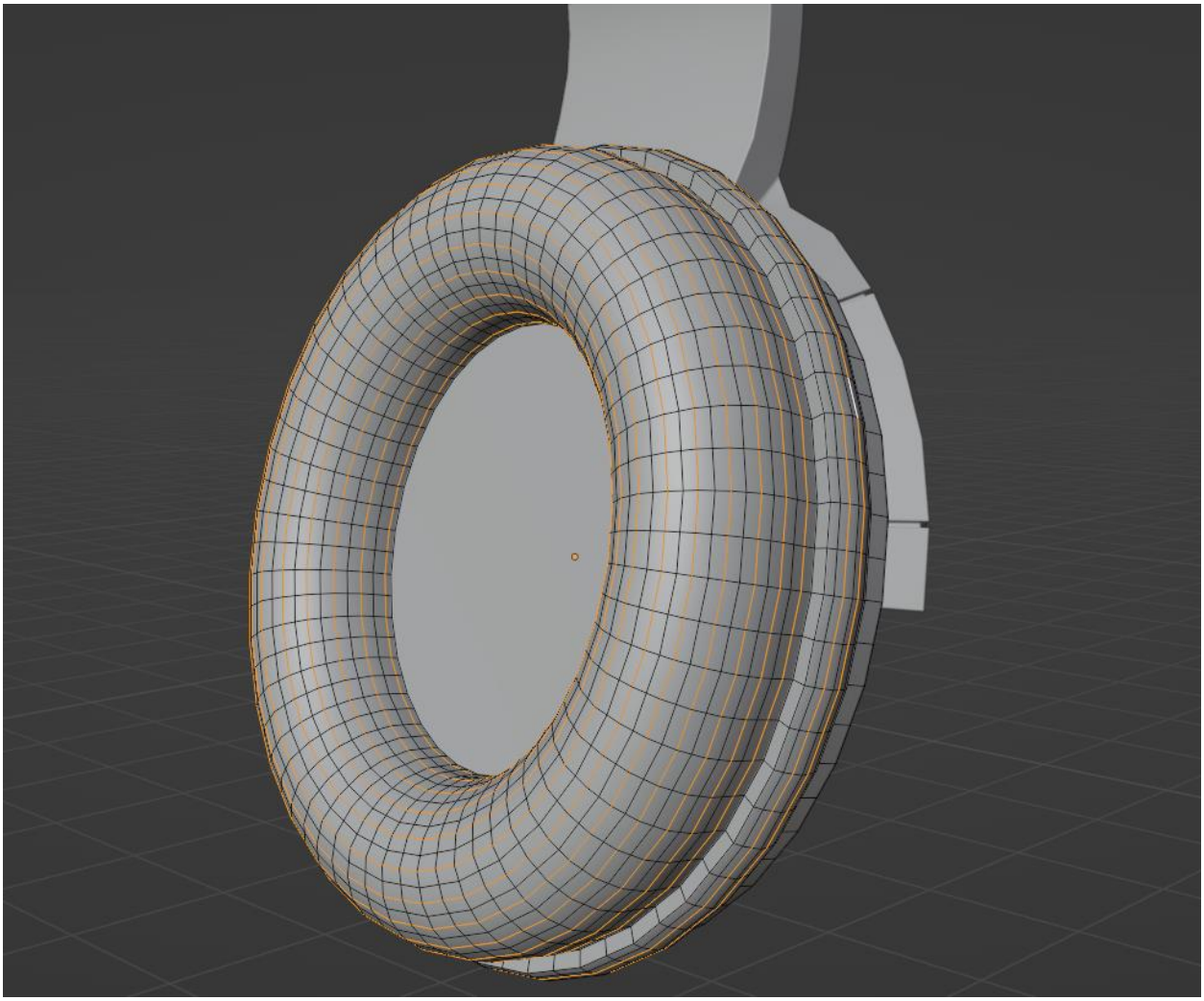


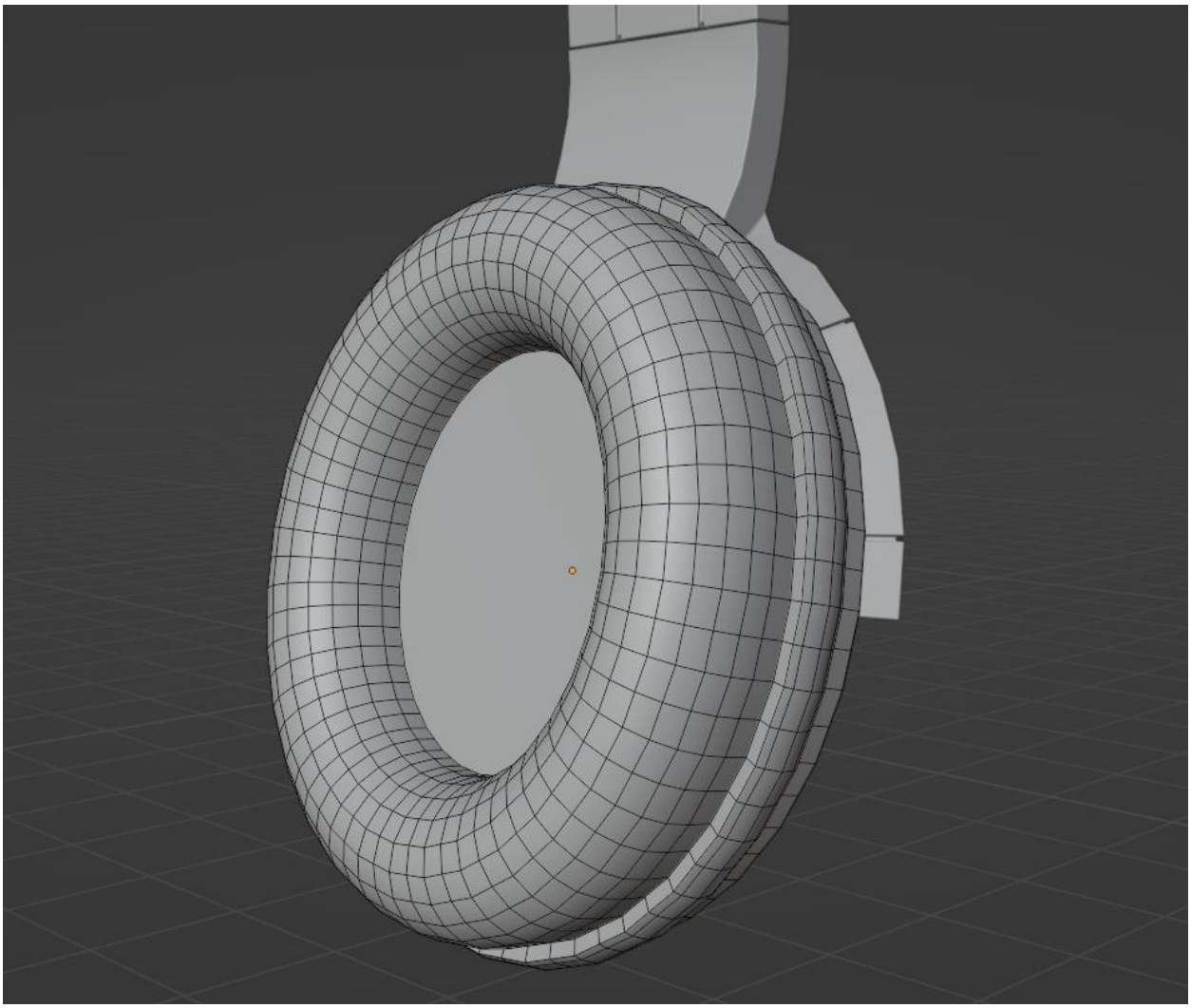


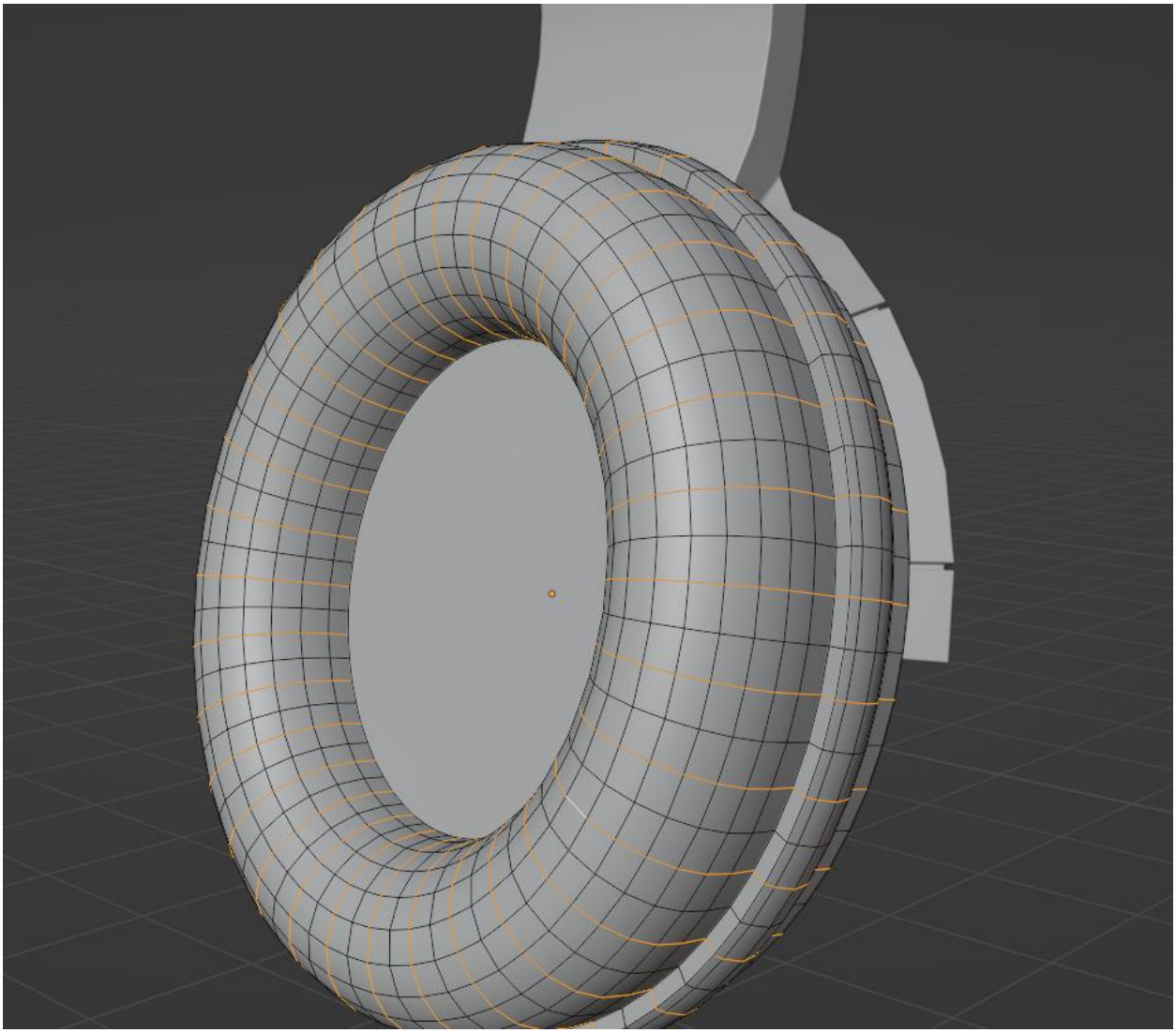
Object Mode
View
Select
Add
Object
Global
Options
User Perspective
(1) Collection | Cylinder.001

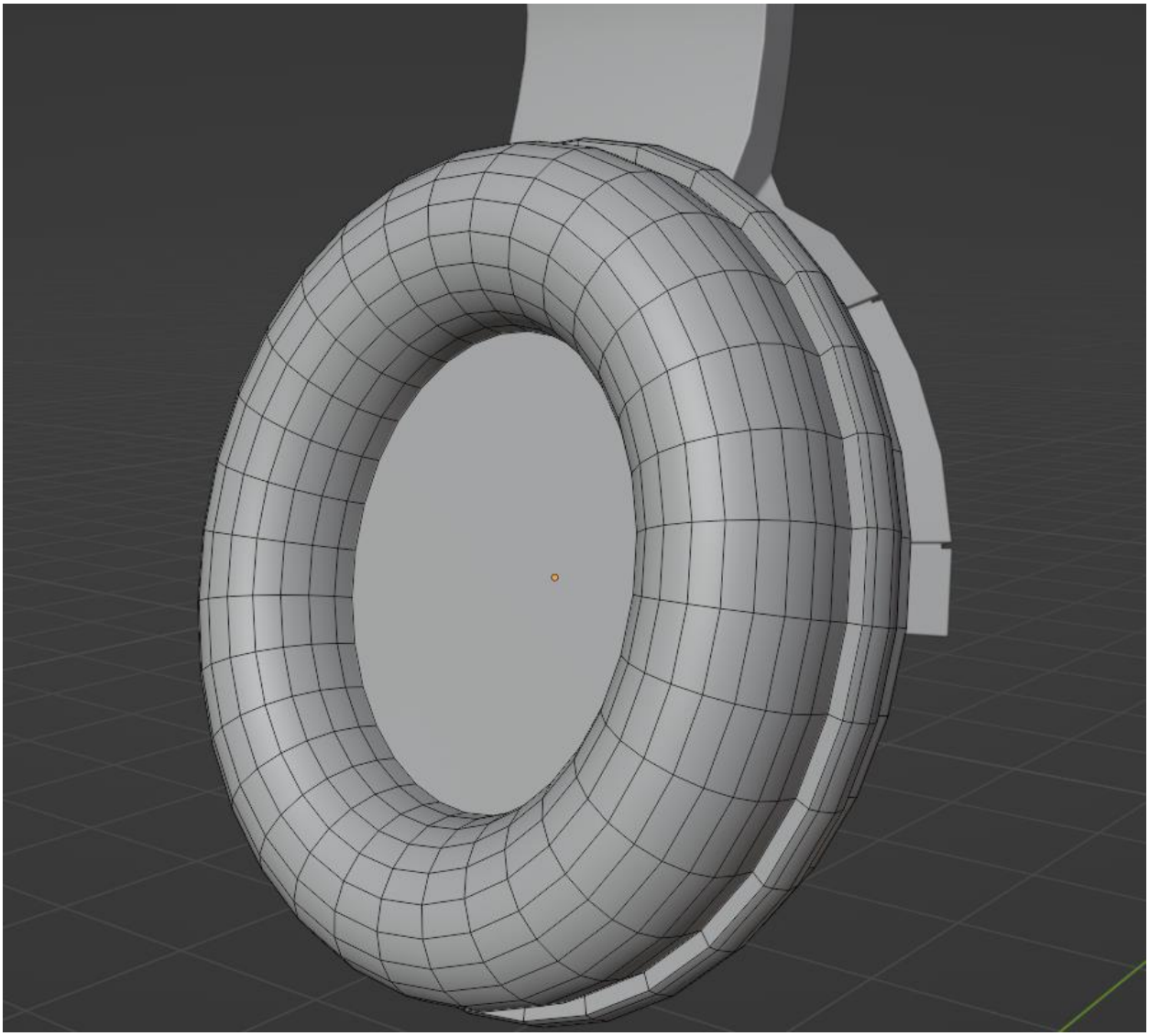
Chapter 2: Optimizing Your Asset for Better Rendering Performance

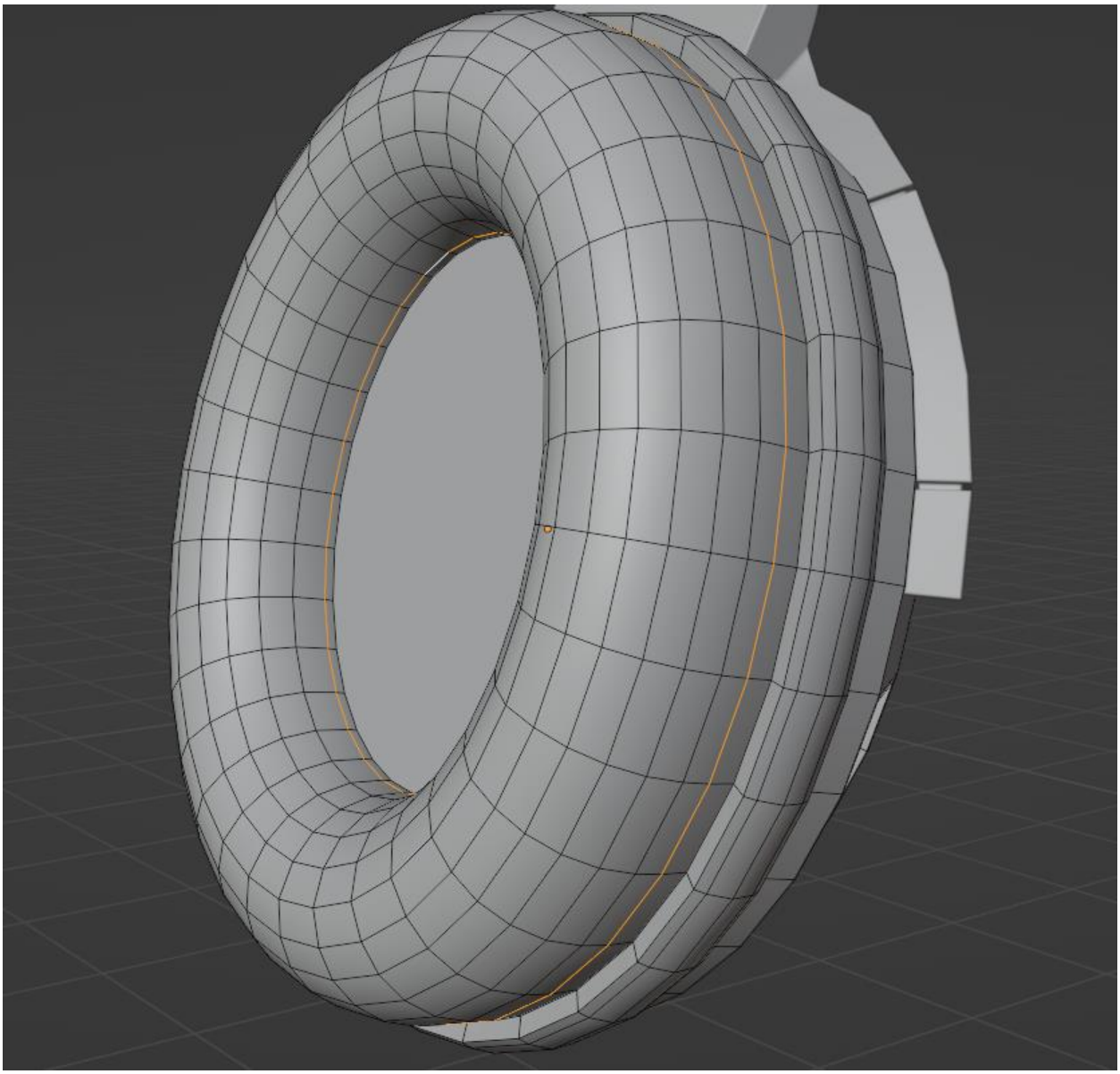


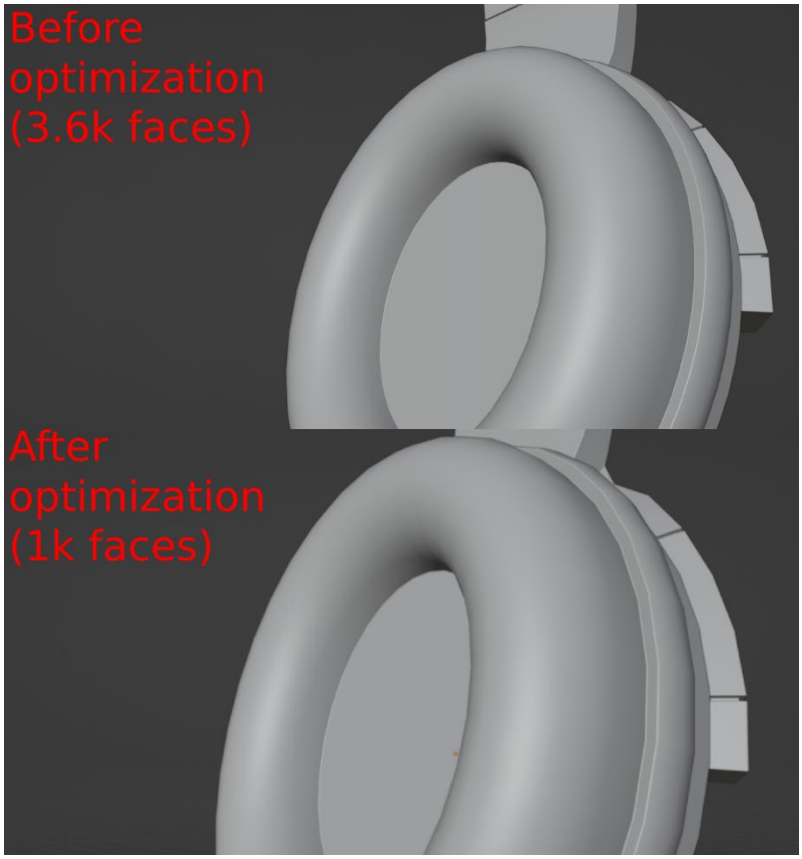


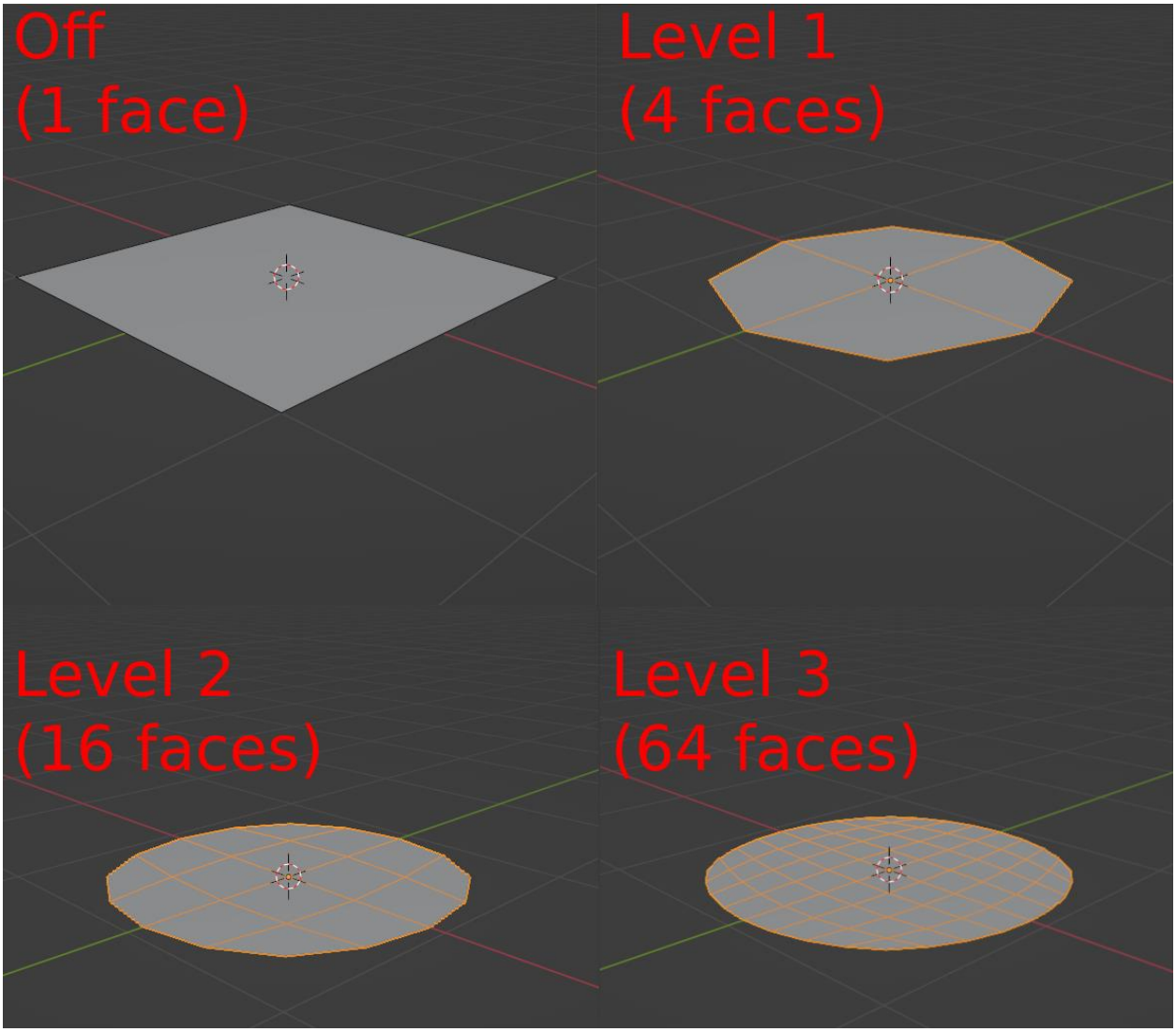


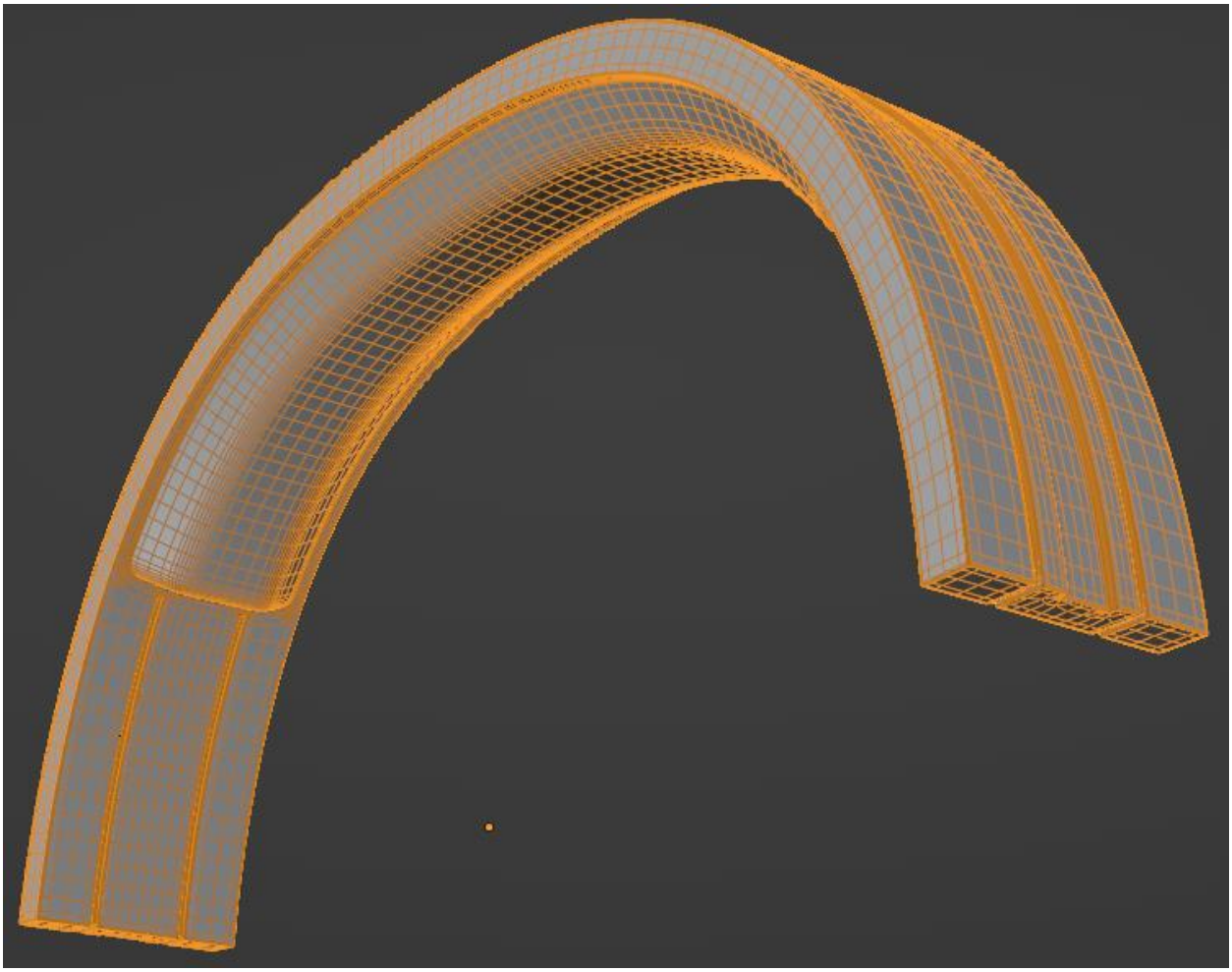


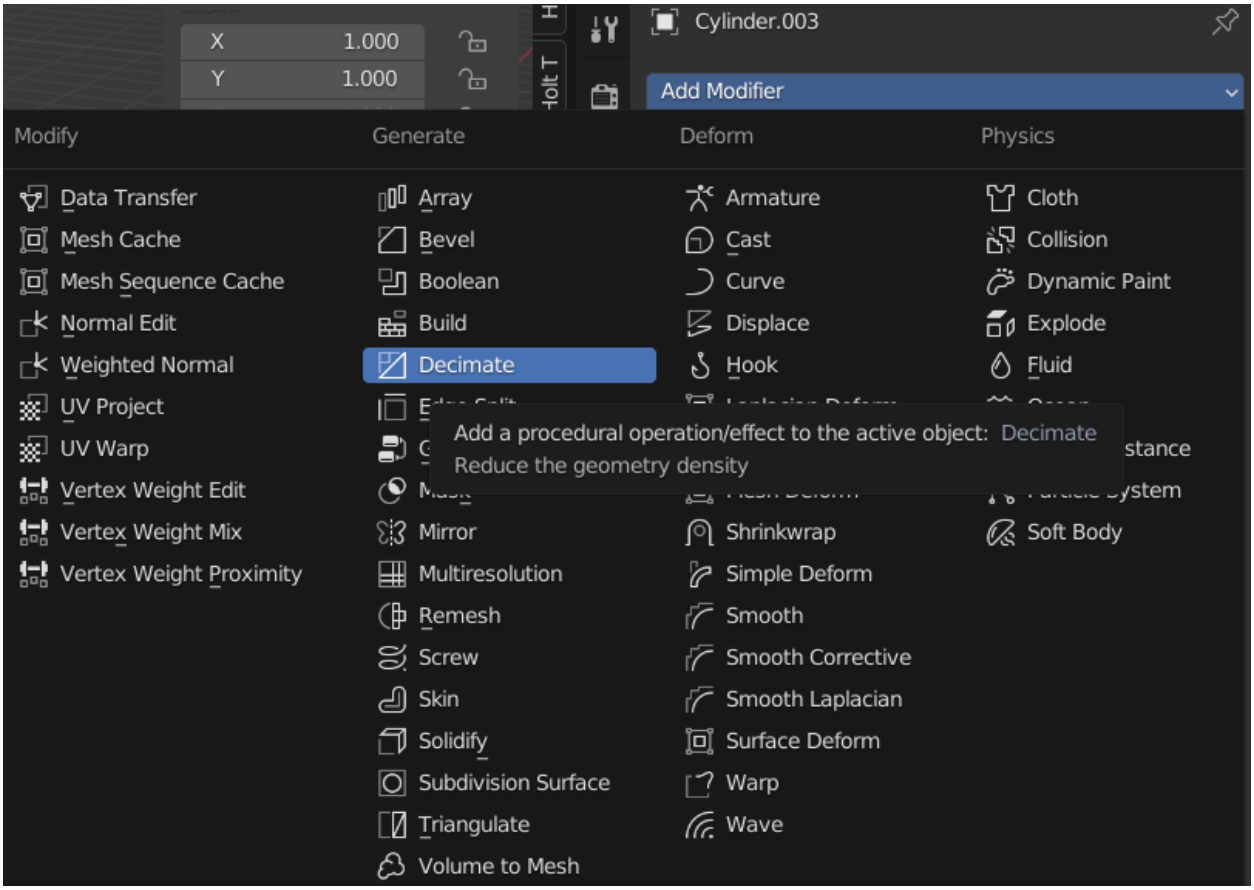


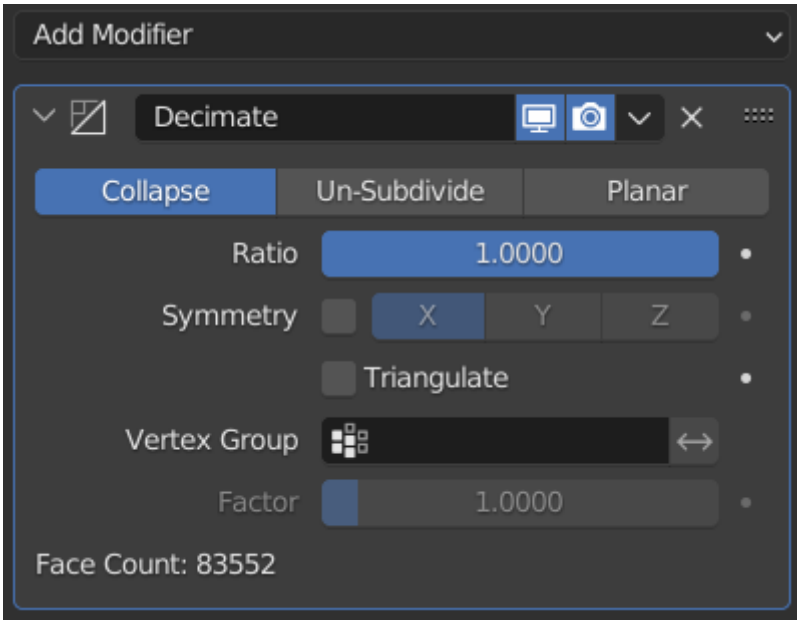


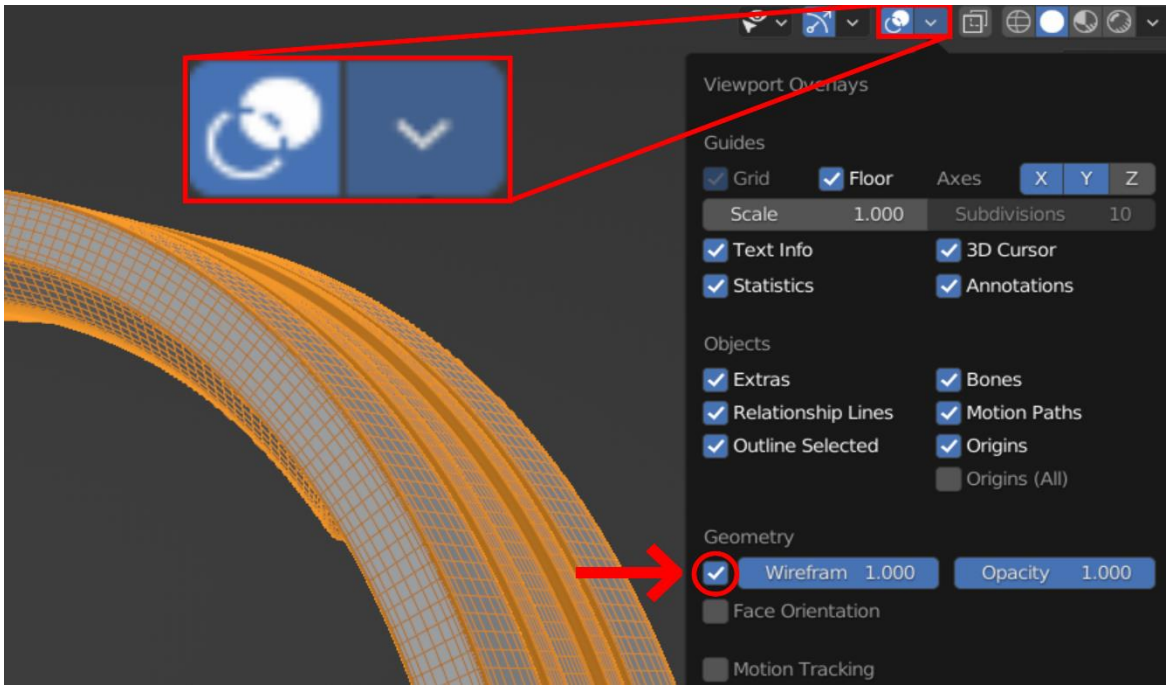

Before
optimization
(3.6k faces)
After
optimization
(1k faces)

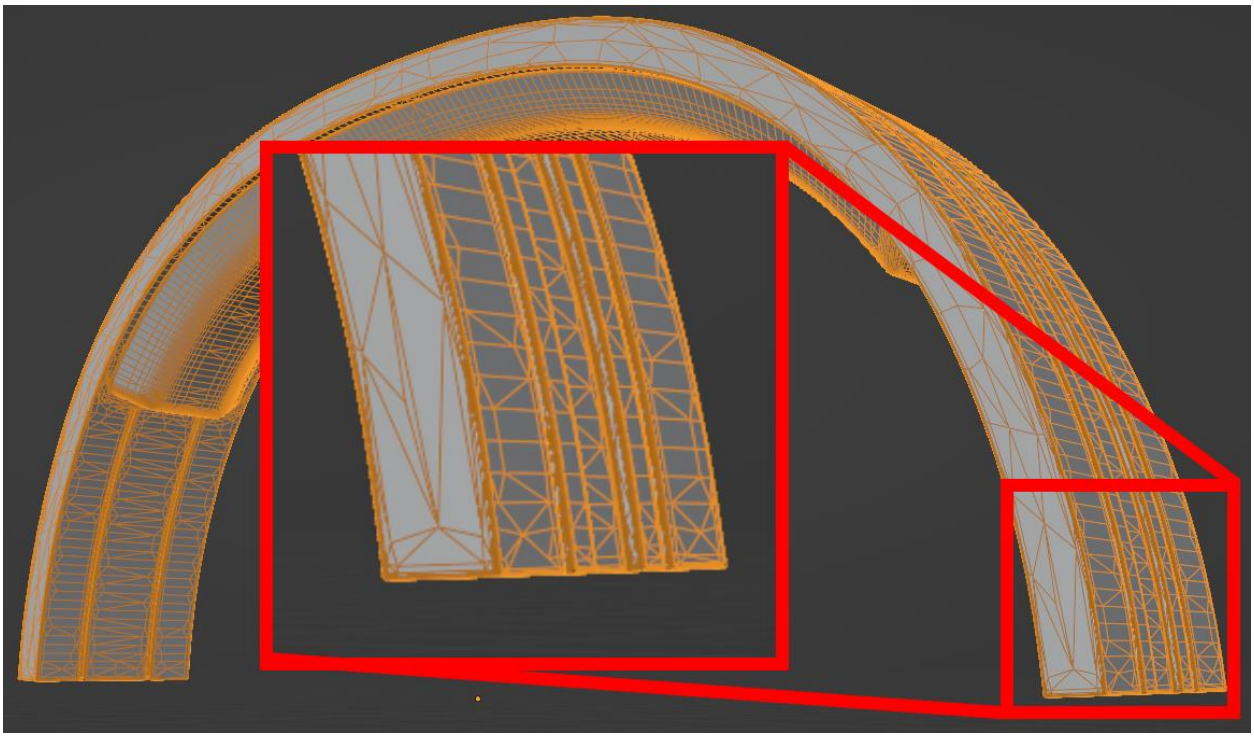

Off
(1 face)
Level 1
(4 faces)
Level 2
(16 faces)
Level 3
(64 faces)

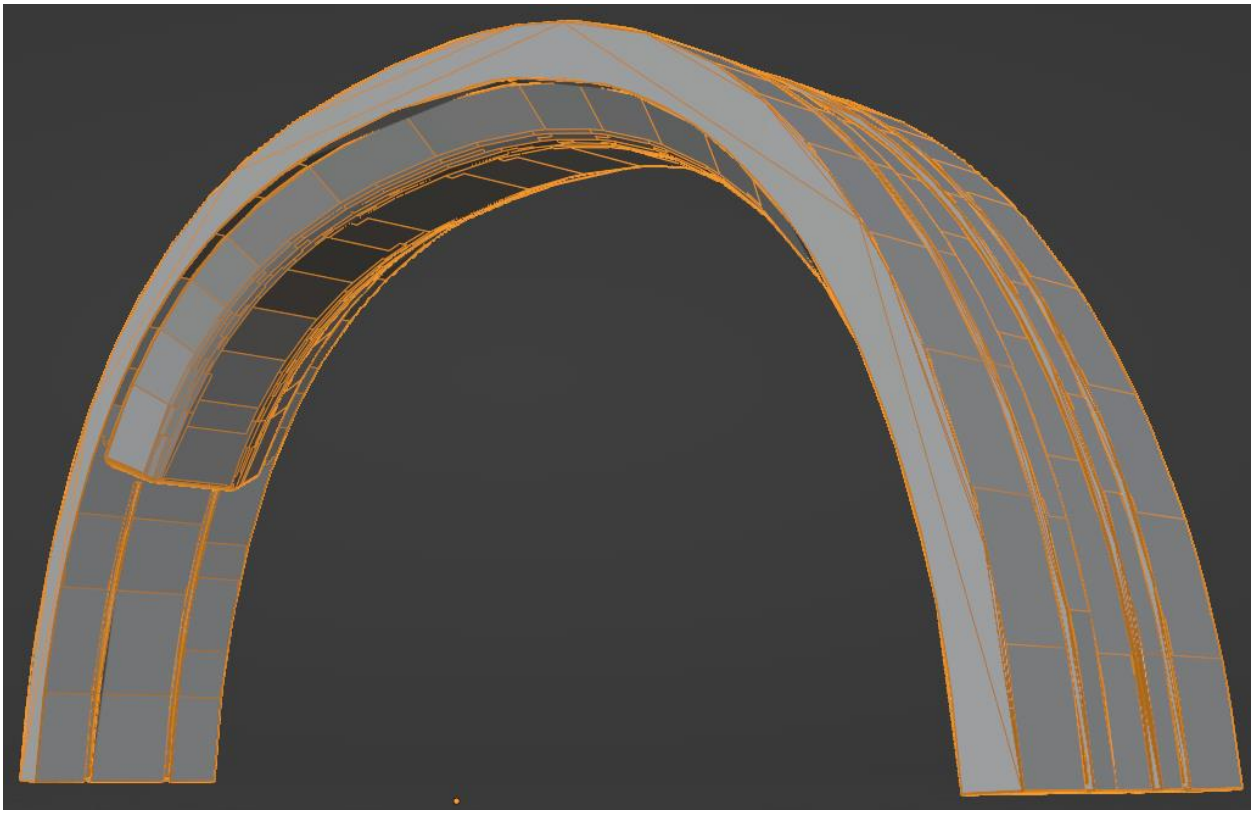


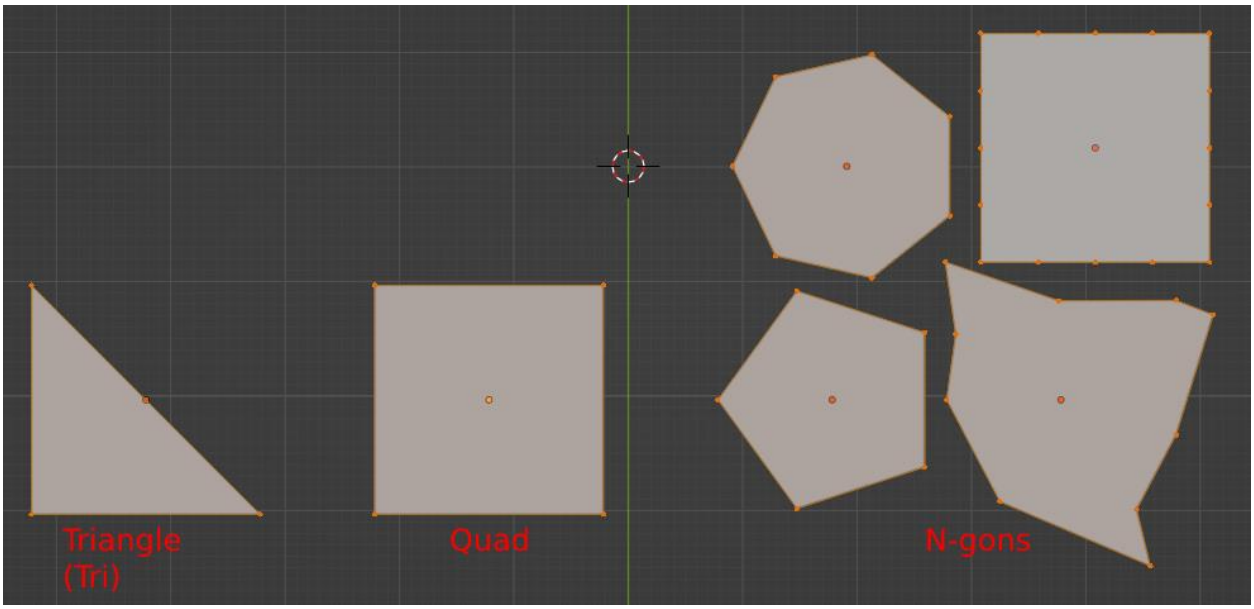

X 1.000
Y 1.000
Cylinder.003
Add Modifier
Modify
Generate
Deform
Physics
Data Transfer
Mesh Cache
Mesh Sequence Cache
Normal Edit
Weighted Normal
UV Project
UV Warp
Vertex Weight Edit
Vertex Weight Mix
Vertex Weight Proximity
Array
Bevel
Boolean
Build
Decimate
Mirror
Multiresolution
Remesh
Screw
Skin
Solidify
Subdivision Surface
Triangulate
Volume to Mesh
Armature
Cast
Curve
Displace
Hook
Shrinkwrap
Simple Deform
Smooth
Smooth Corrective
Smooth Laplacian
Surface Deform
Warp
Wave
Cloth
Collision
Dynamic Paint
Explode
Fluid
Soft Body
Add a procedural operation/effect to the active object: Decimate
Reduce the geometry density

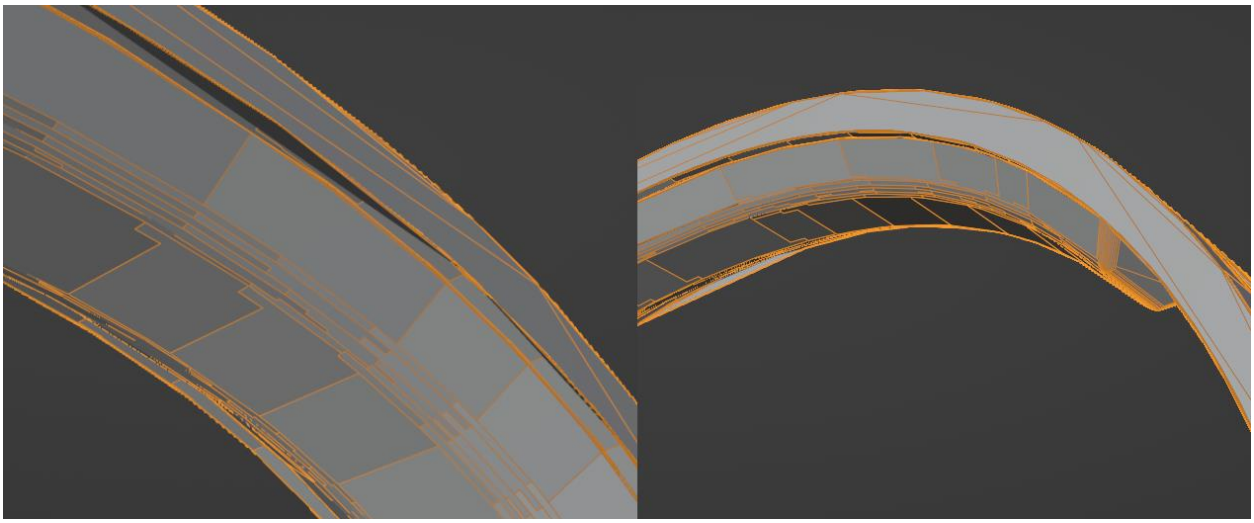

Add Modifier
Decimate
Collapse
Un-Subdivide
Planar
Ratio
1.0000
Symmetry
X
Y
Z
Triangulate
Vertex Group
Factor
1.0000
Face Count: 83552

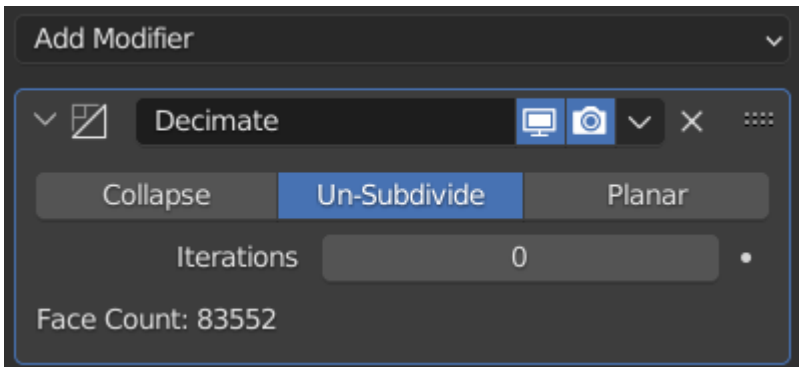

Viewport Overlays
Guides
Grid
Floor
Axes
X
Y
Z
Scale 1.000
Subdivisions 10
Text Info
3D Cursor
Statistics
Annotations
Objects
Extras
Bones
Relationship Lines
Motion Paths
Outline Selected
Origins
Origins (All)
Geometry
Wirefram 1.000
Opacity 1.000
Face Orientation
Motion Tracking

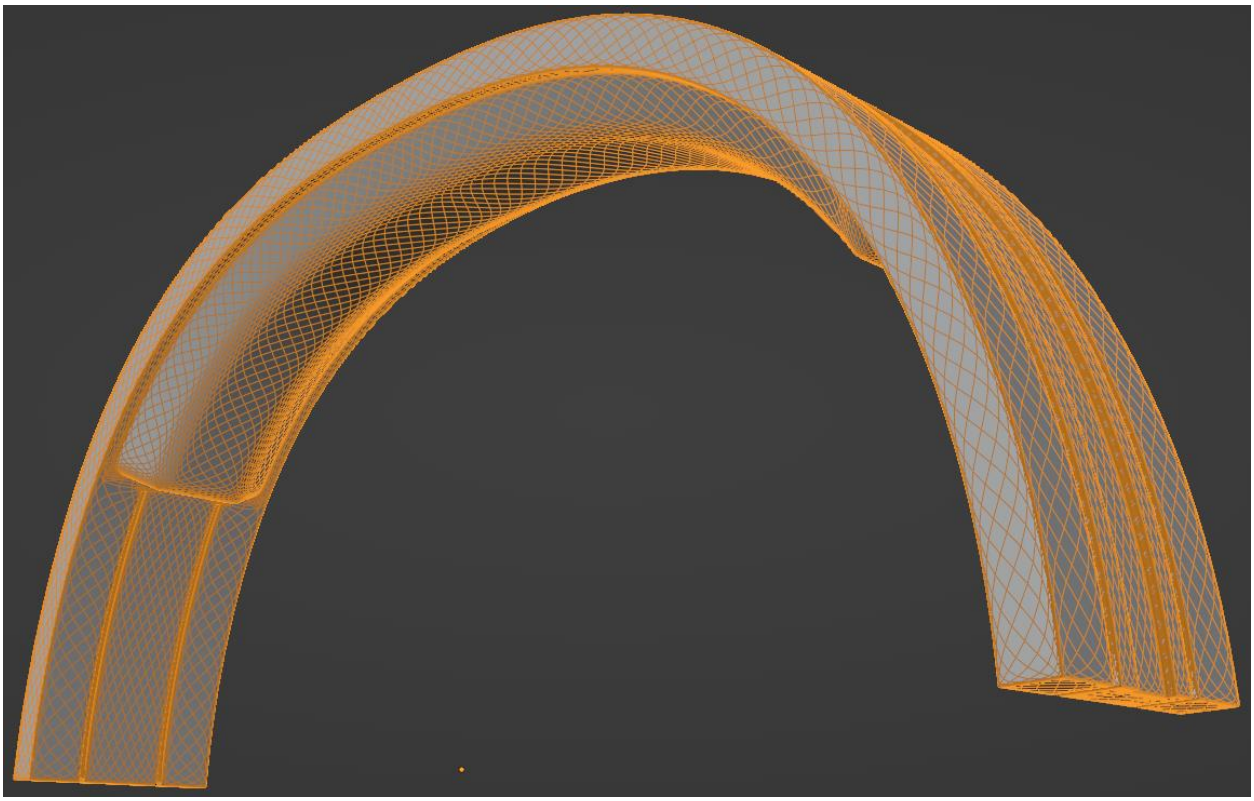


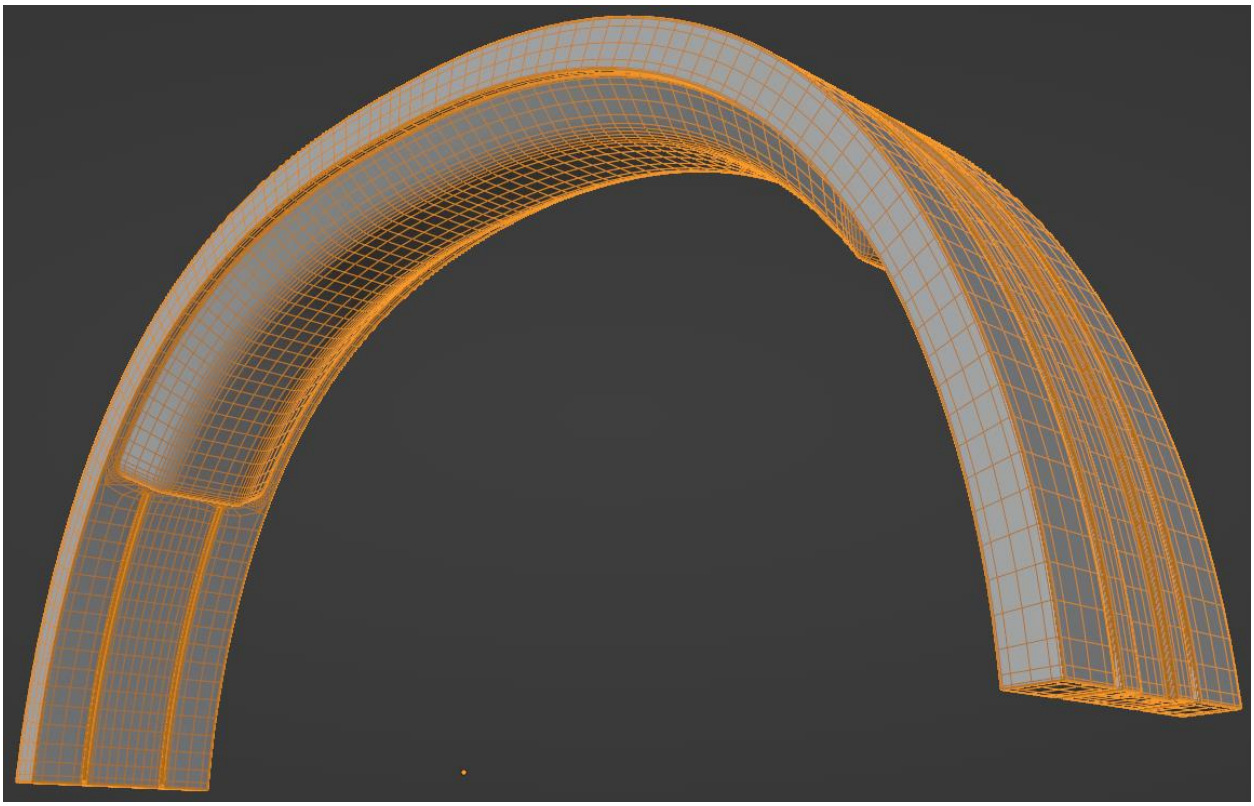


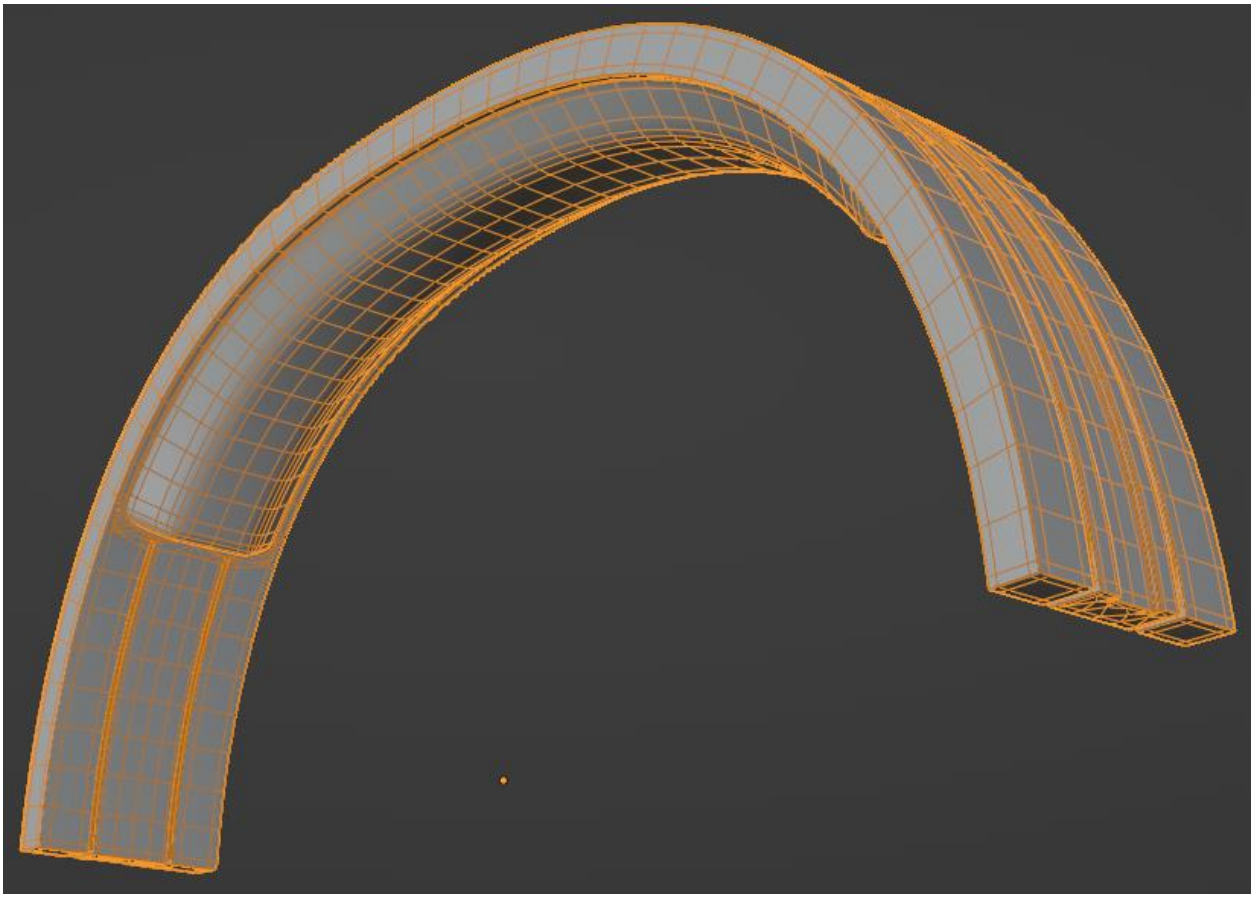

Triangle
(Tri)
Quad
N-gons

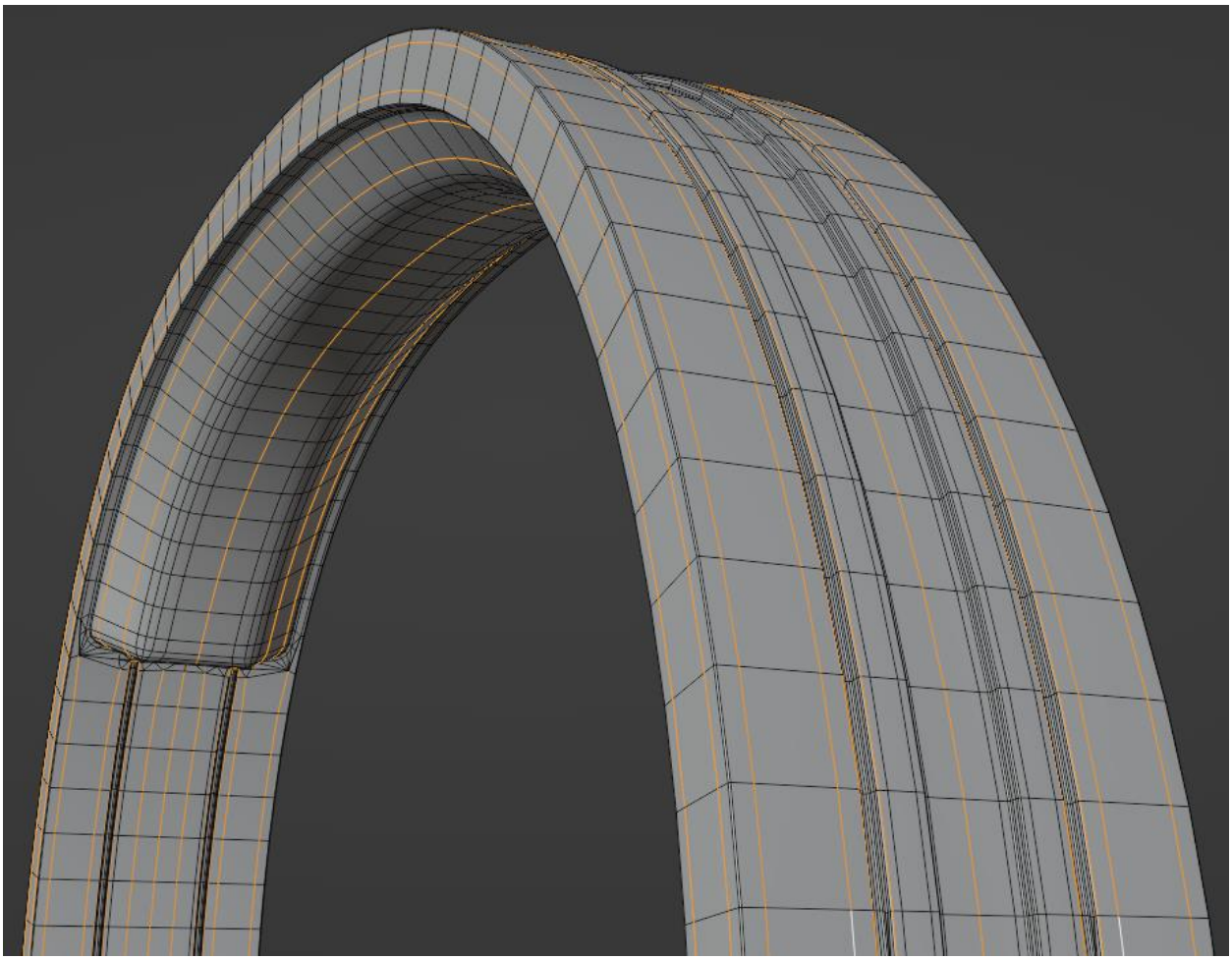


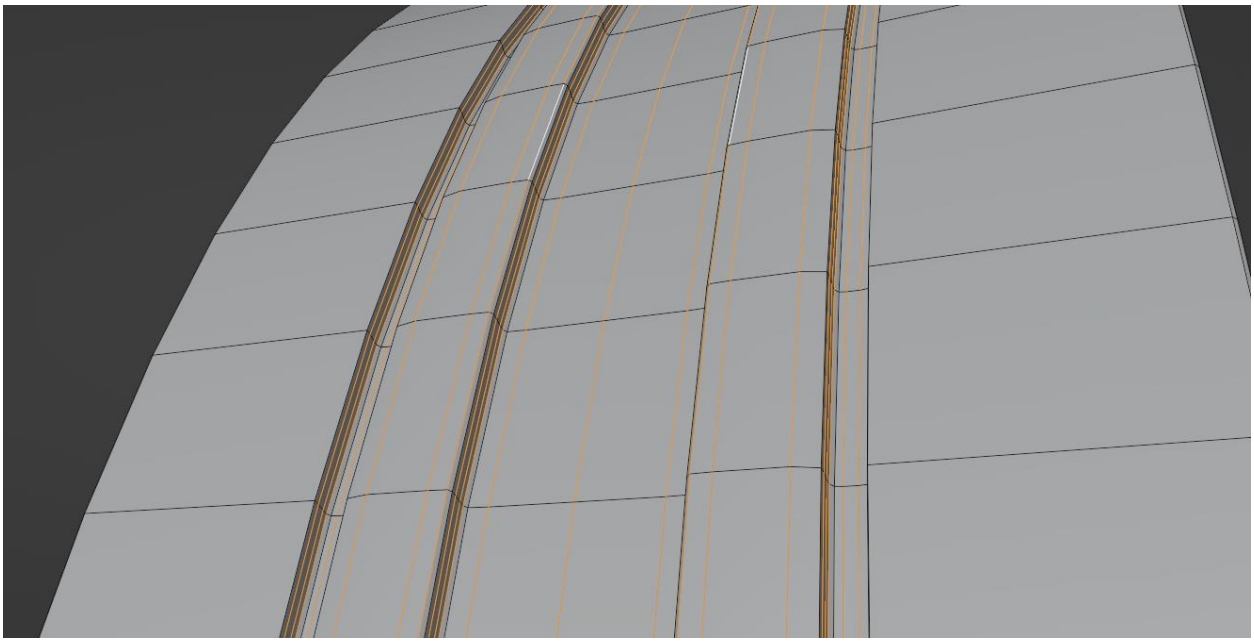

Add Modifier
Decimate
Collapse
Un-Subdivide
Planar
Iterations
0
Face Count: 83552

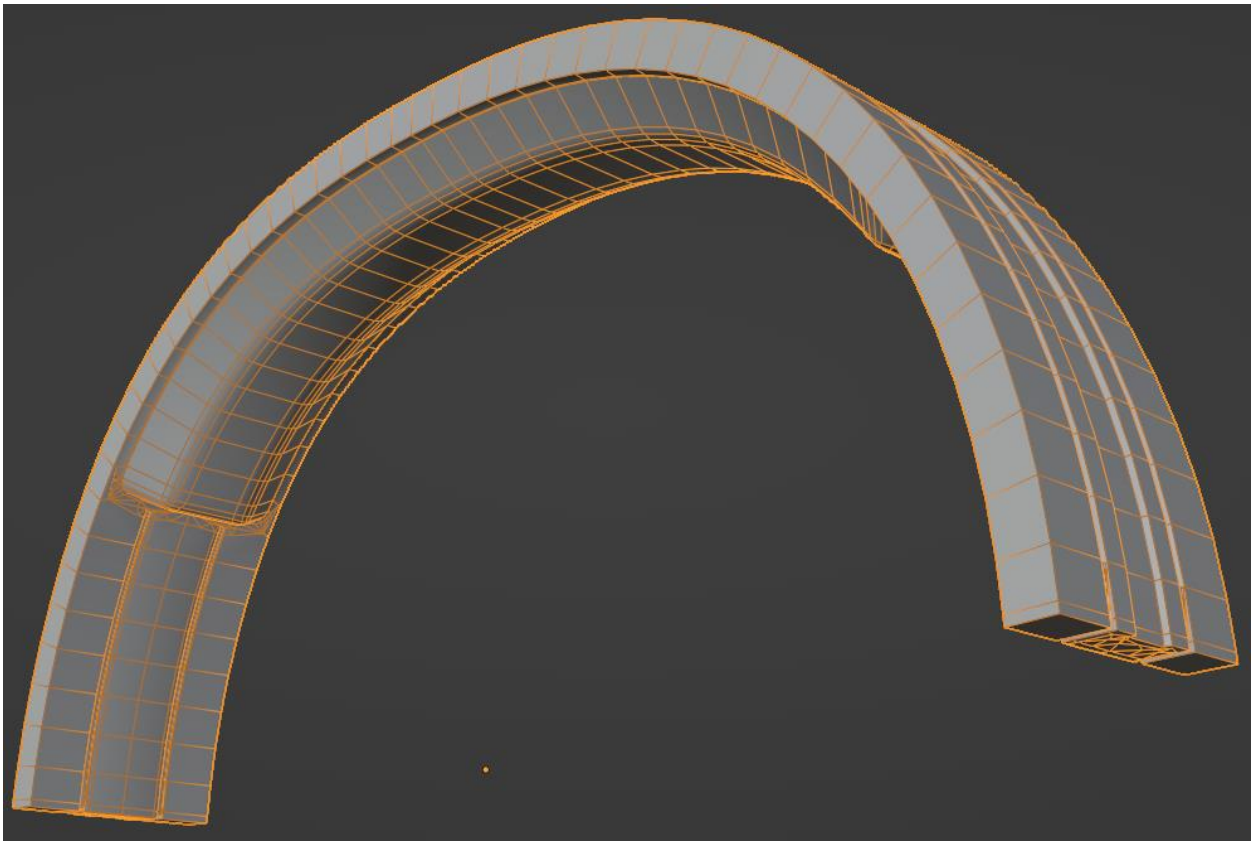


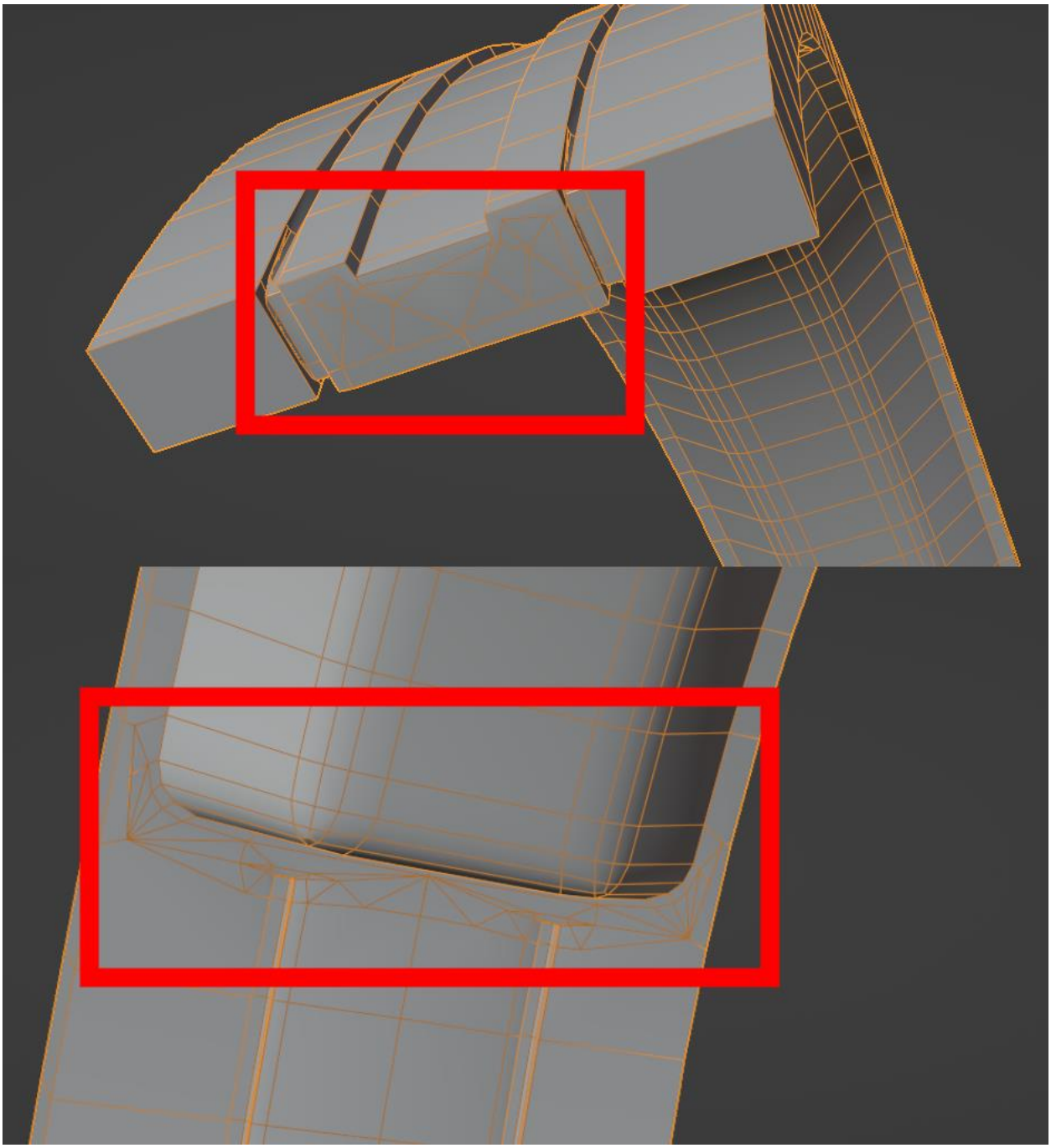


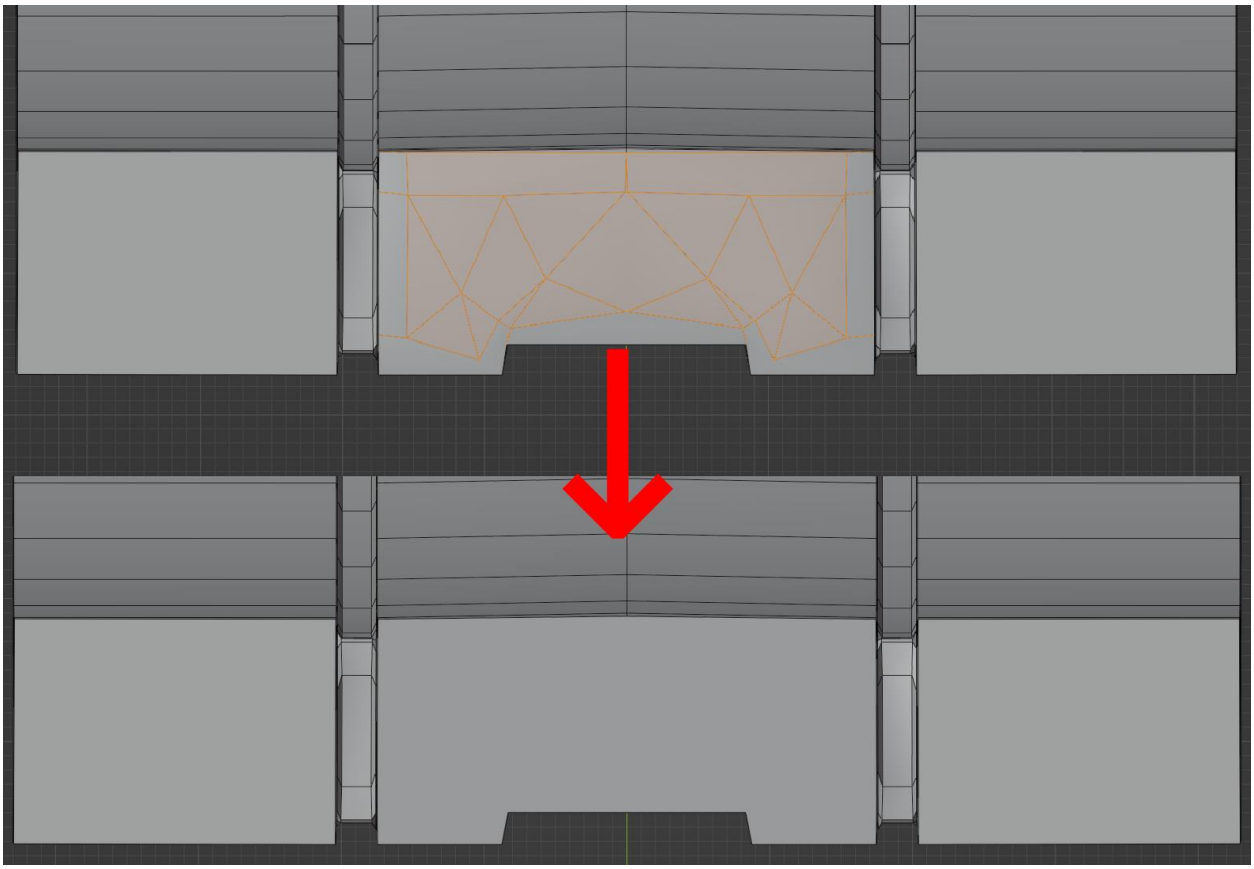


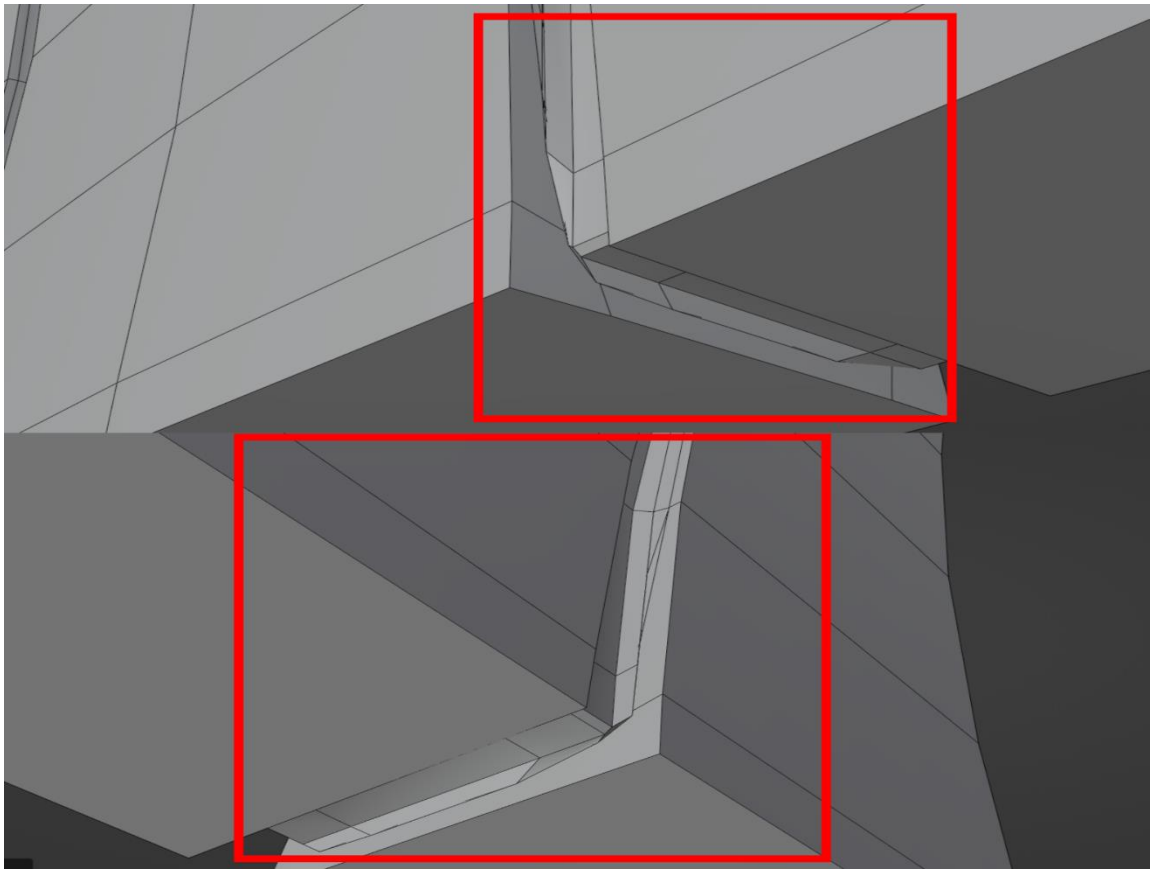


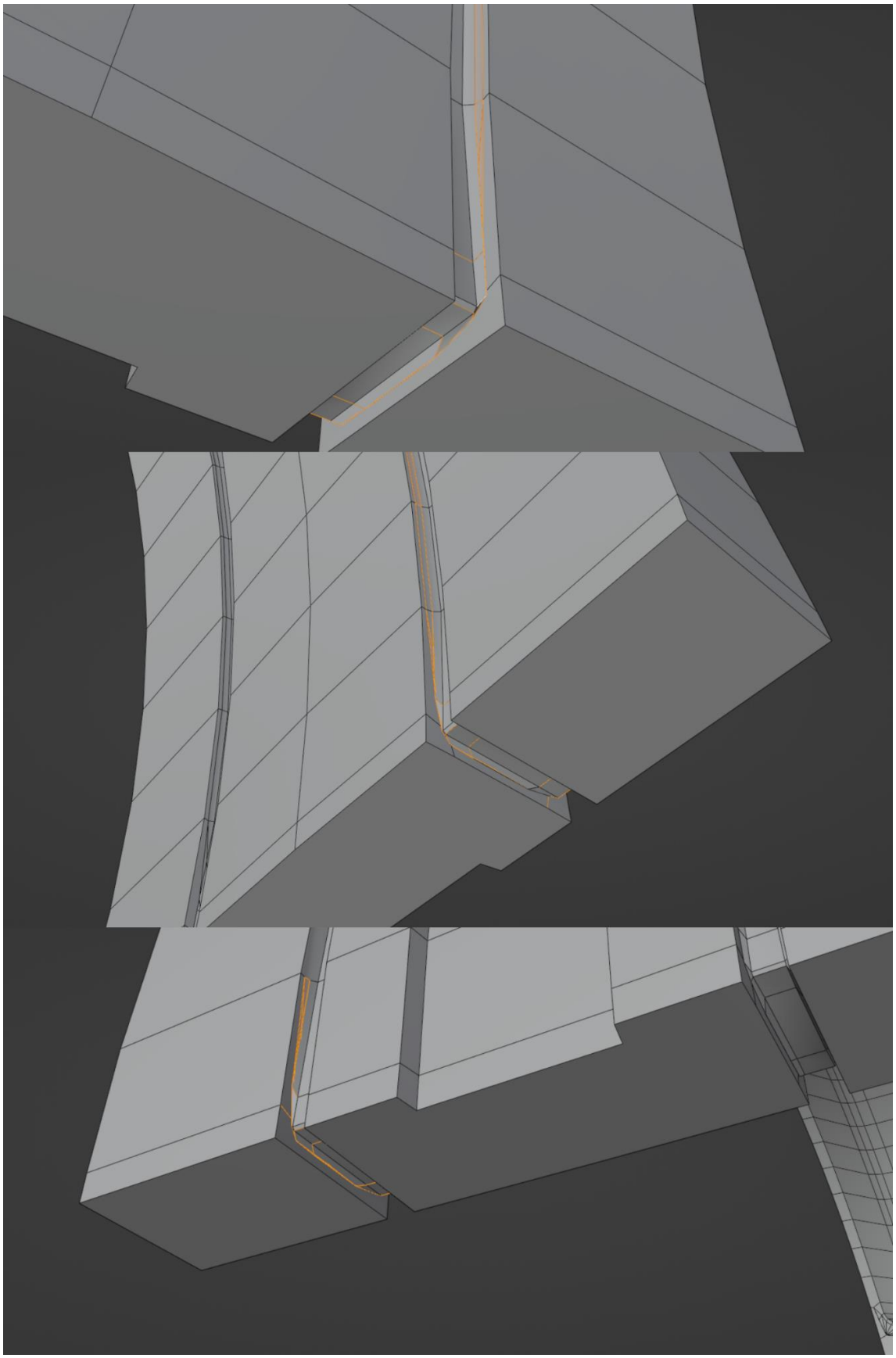


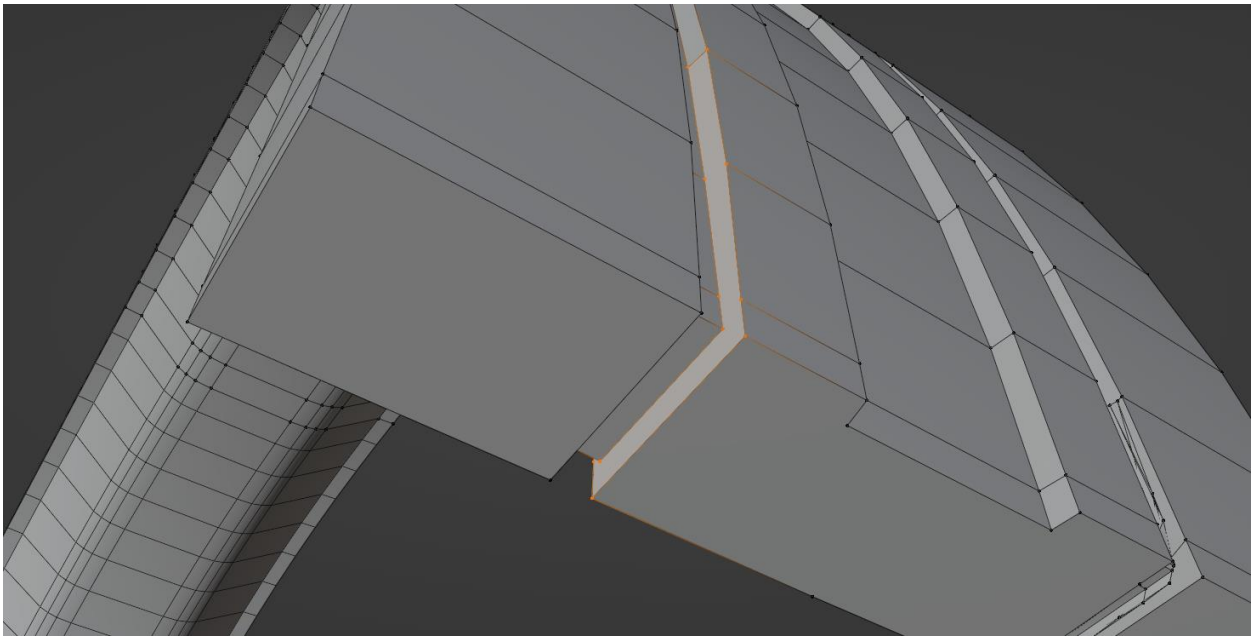


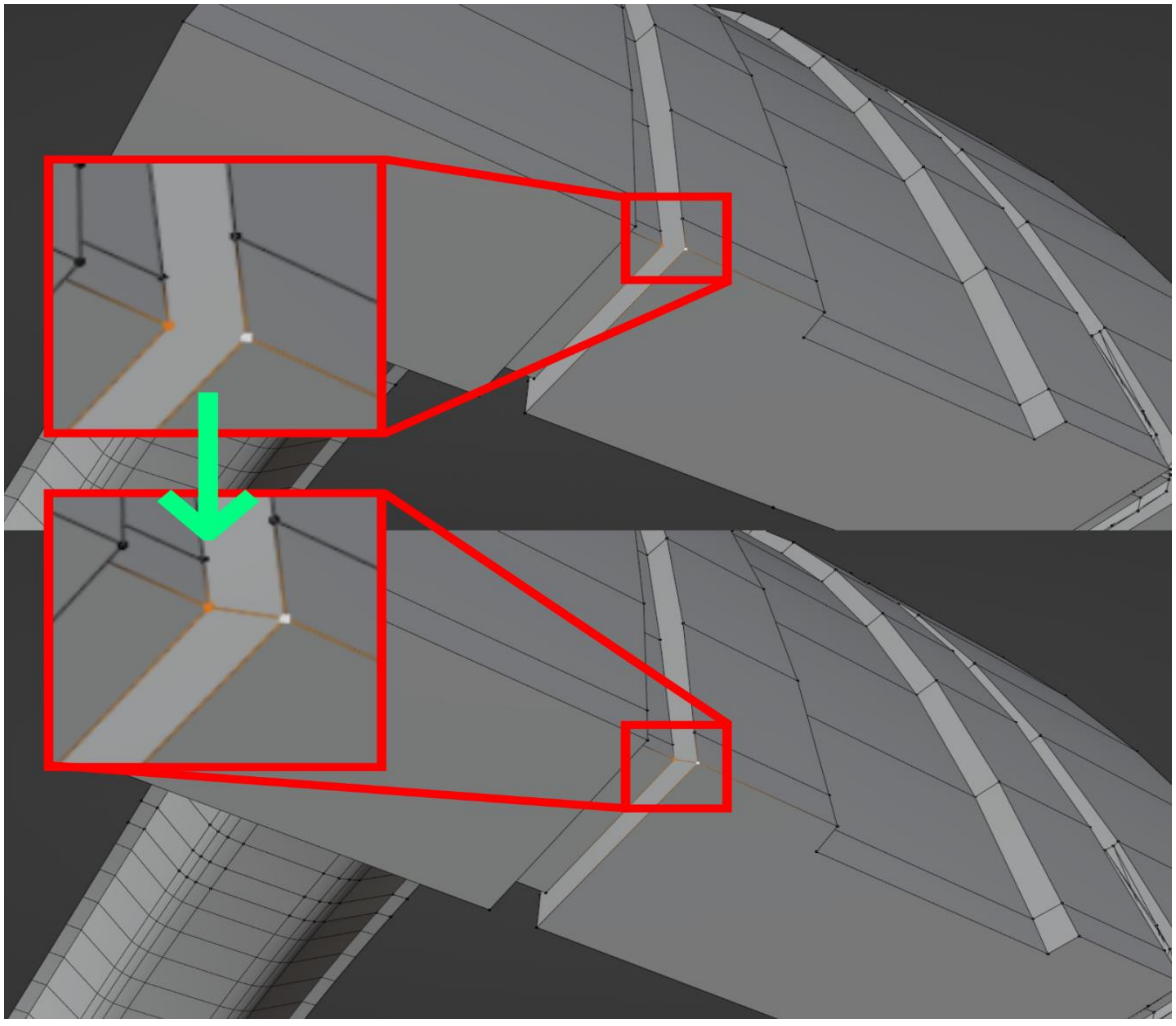


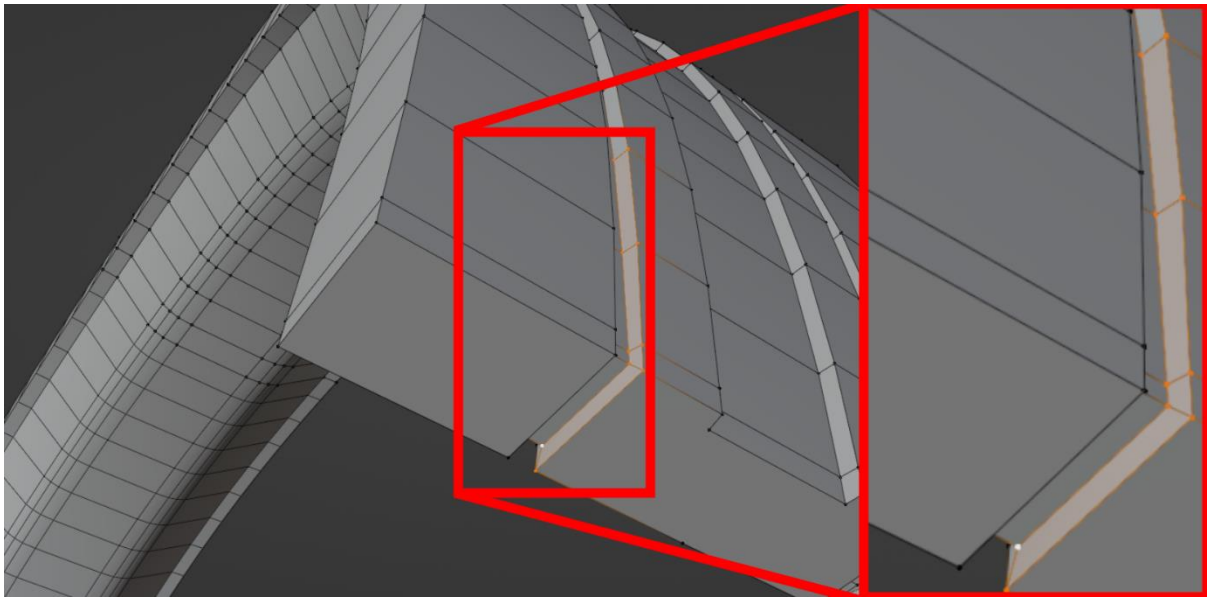


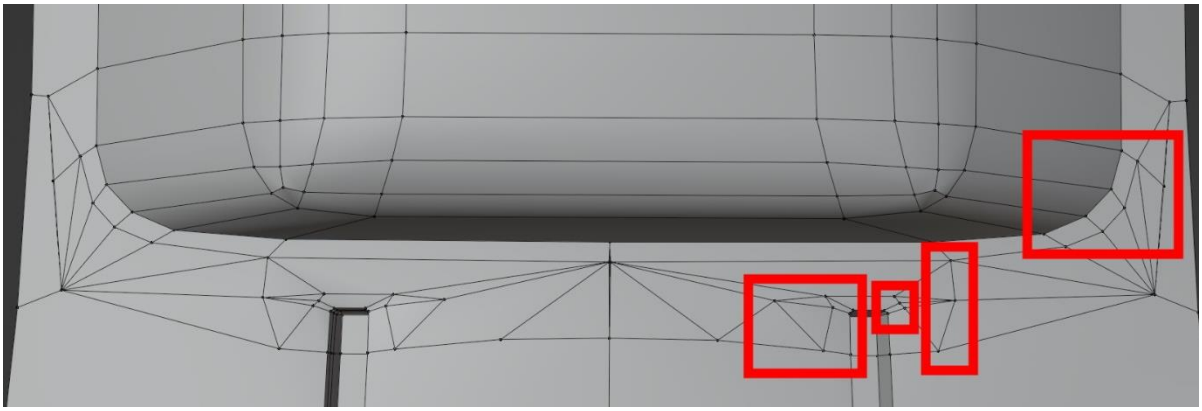


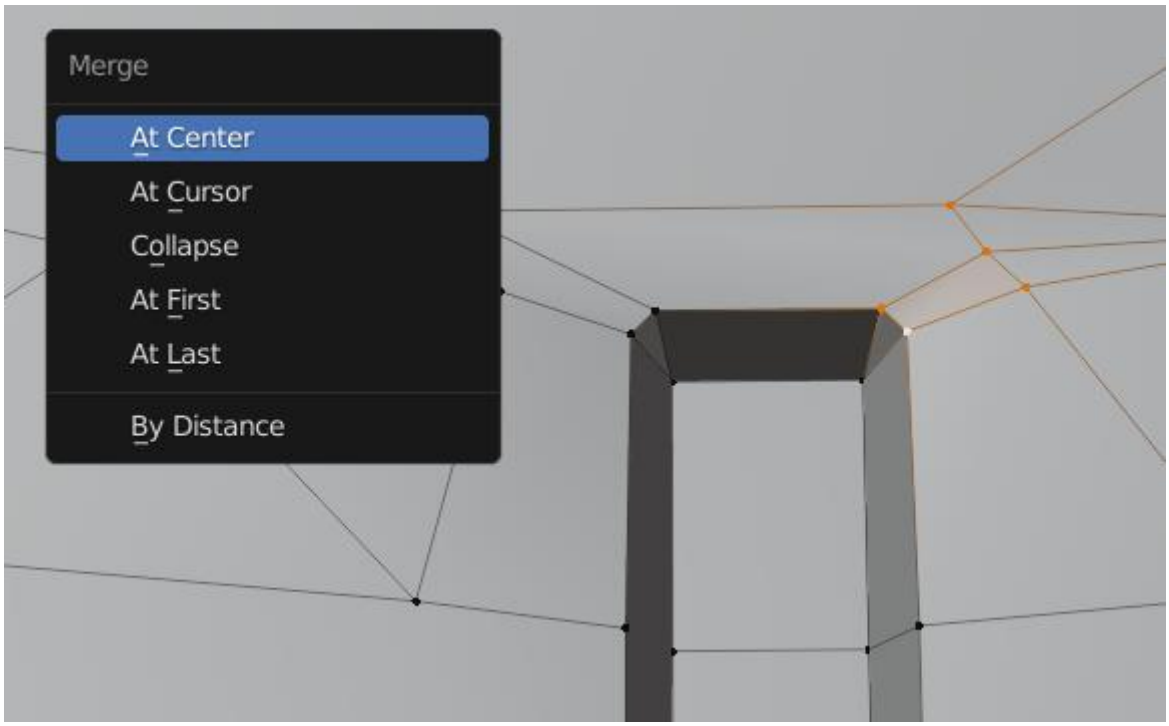


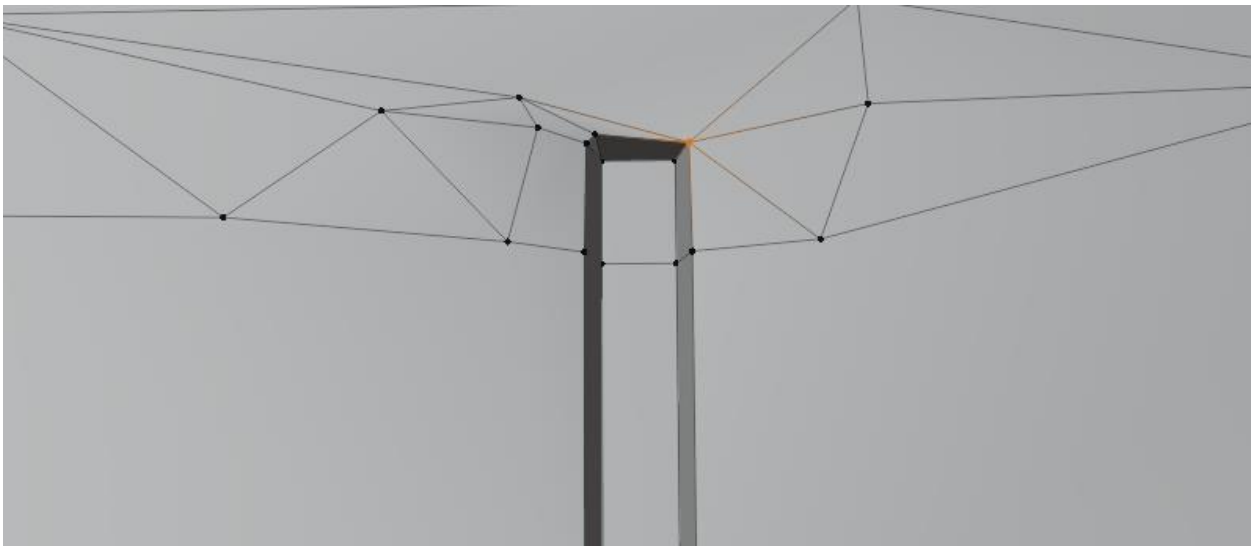


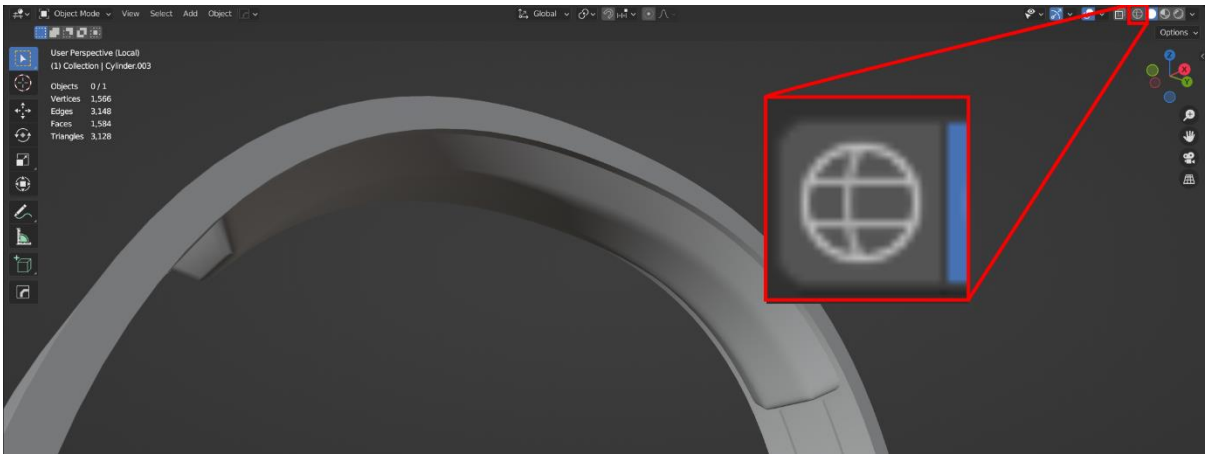


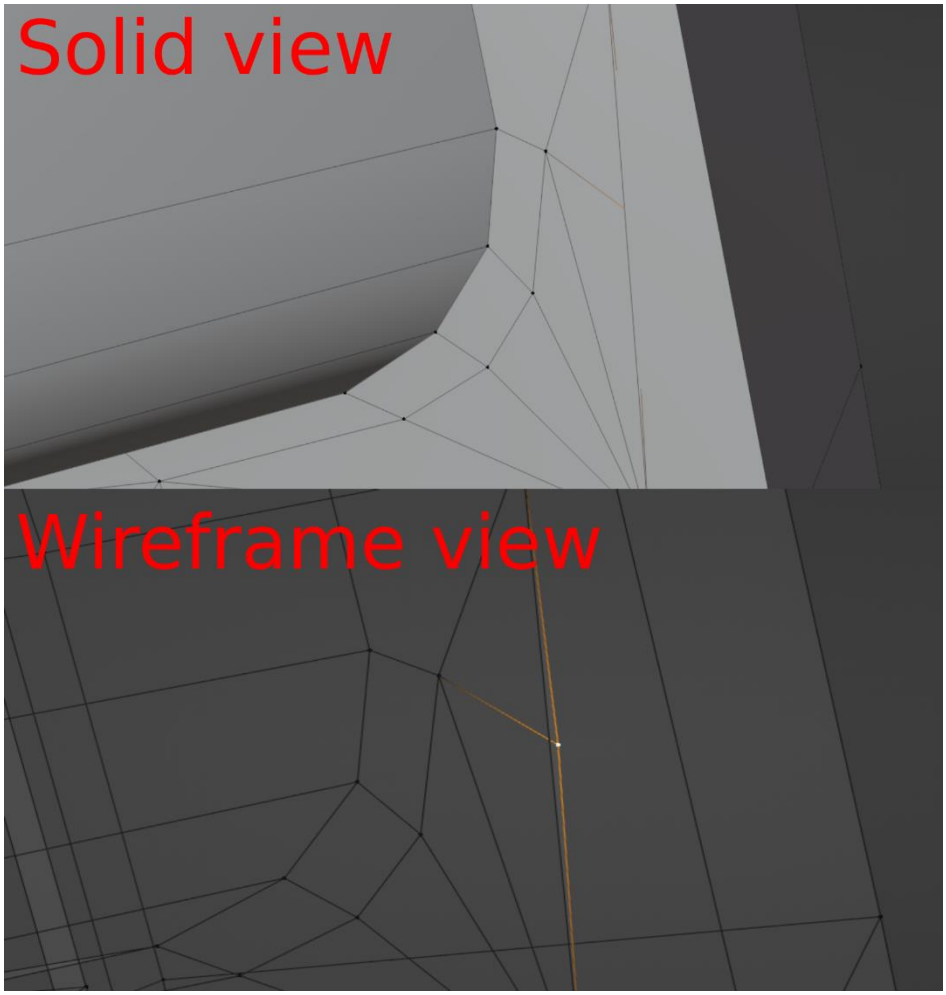


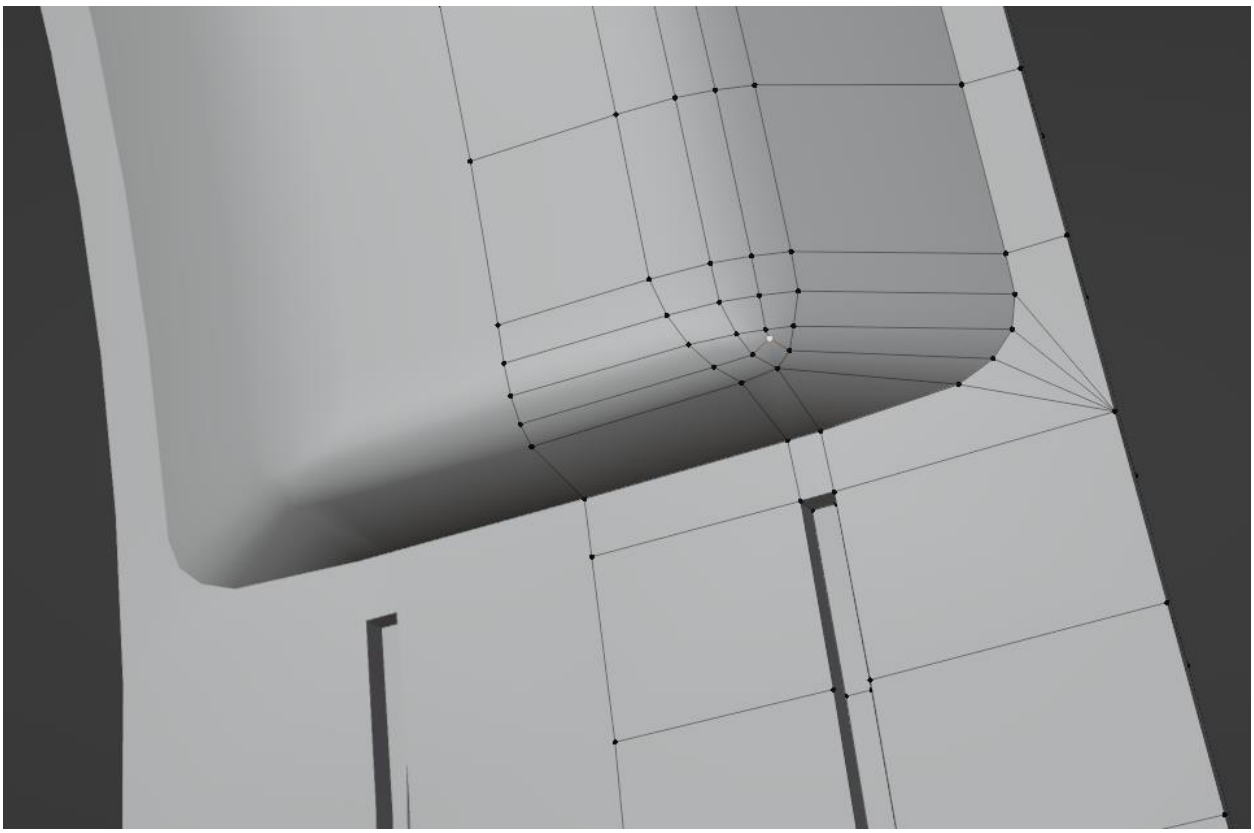


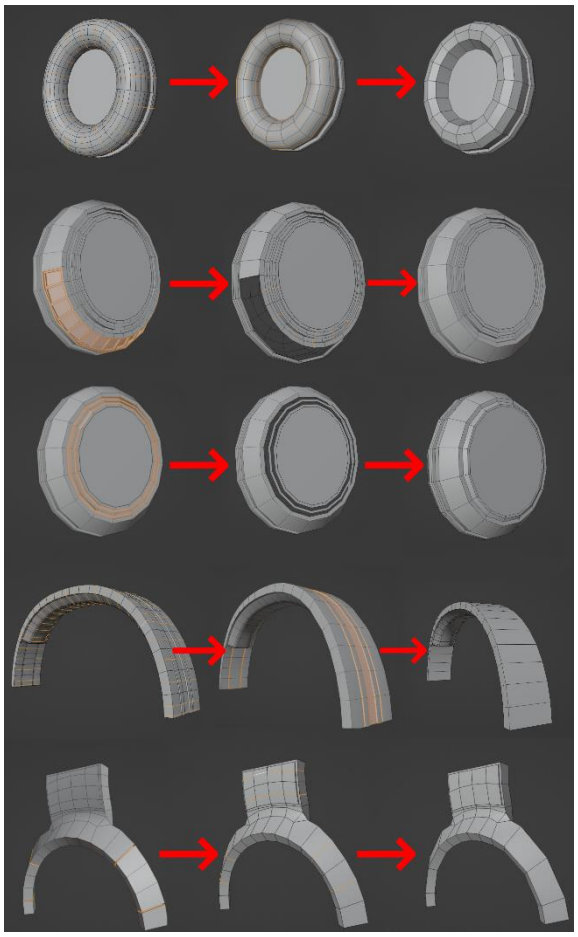

Merge
At Center
At Cursor
Collapse
At First
At Last
By Distance



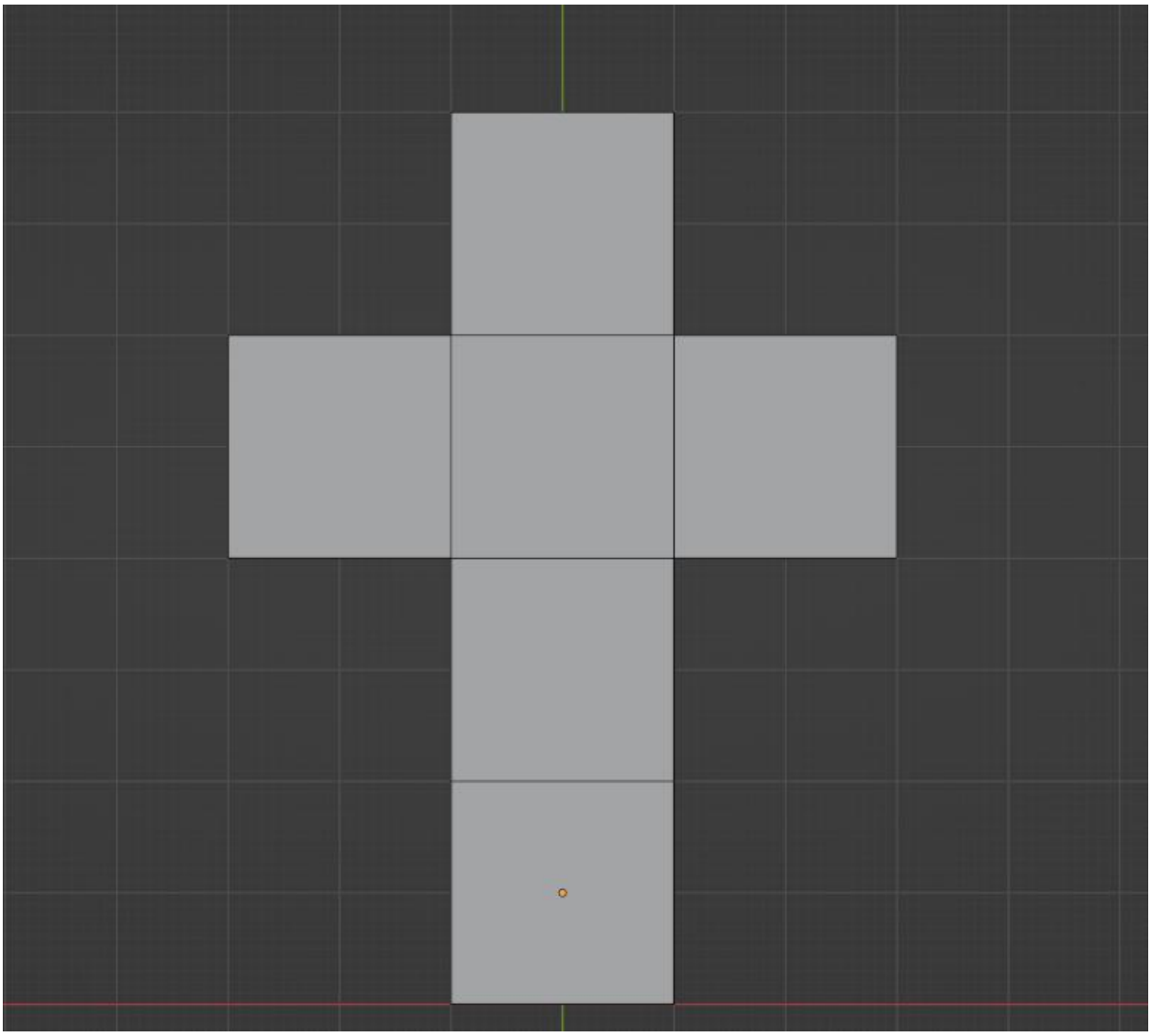

Object Mode
View
Select
Add
Object
Global
Options
User Perspective (Local)
(1) Collection | Cylinder.003
Objects 0 / 1
Vertices 1,566
Edges 3,148
Faces 1,584
Triangles 3,128

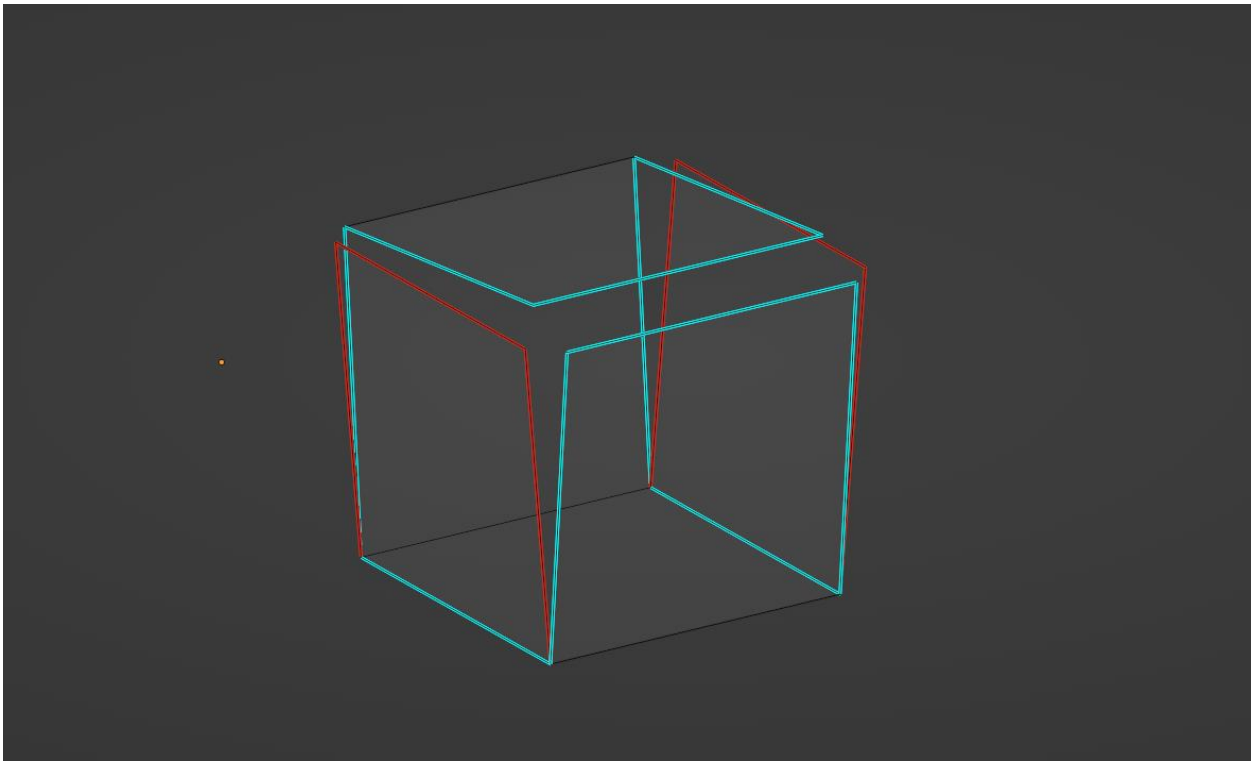

Solid view
Wireframe view

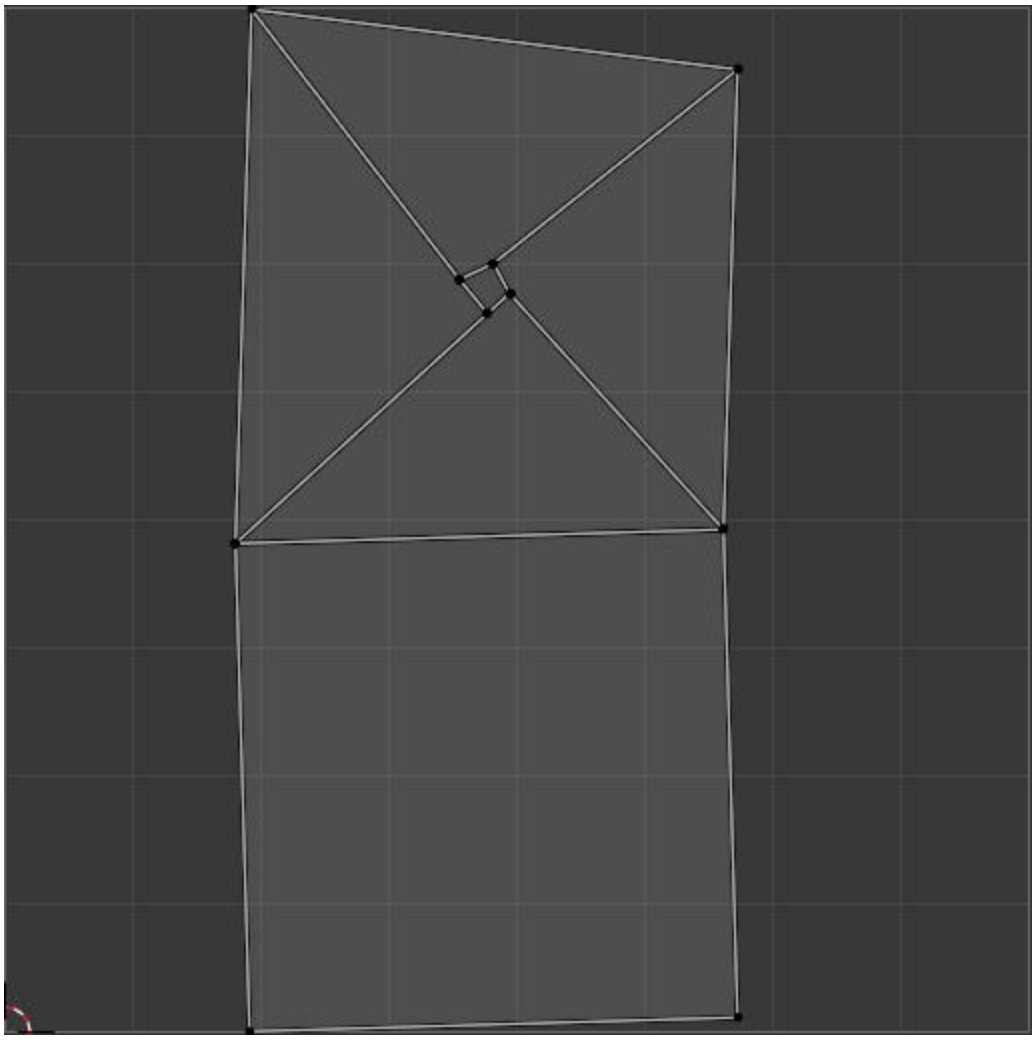


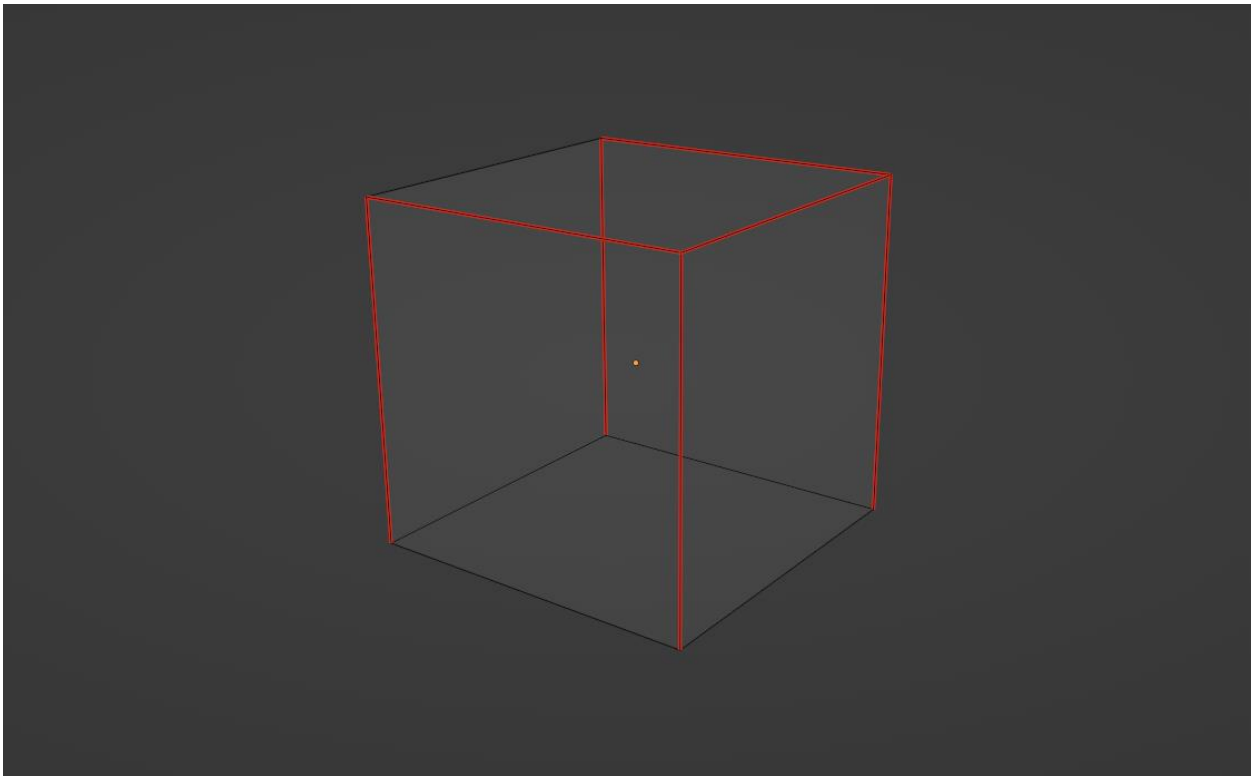


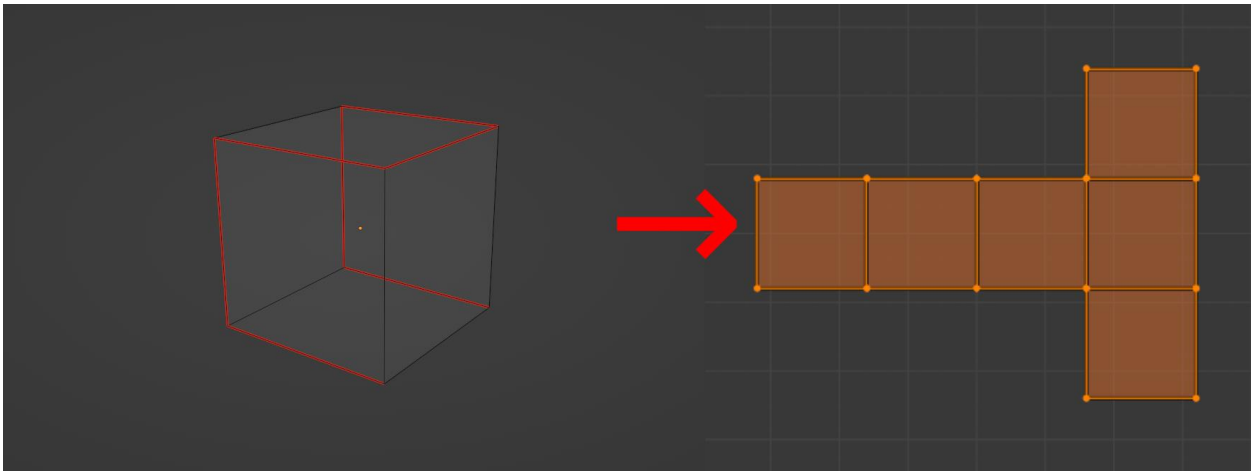
Chapter 3: UV Unwrapping Your 3D Asset

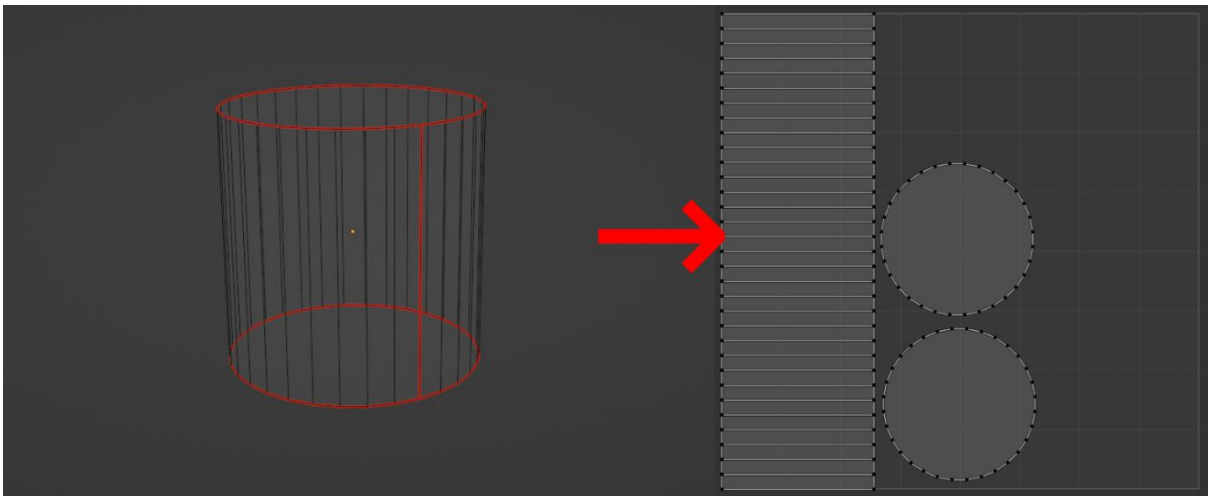


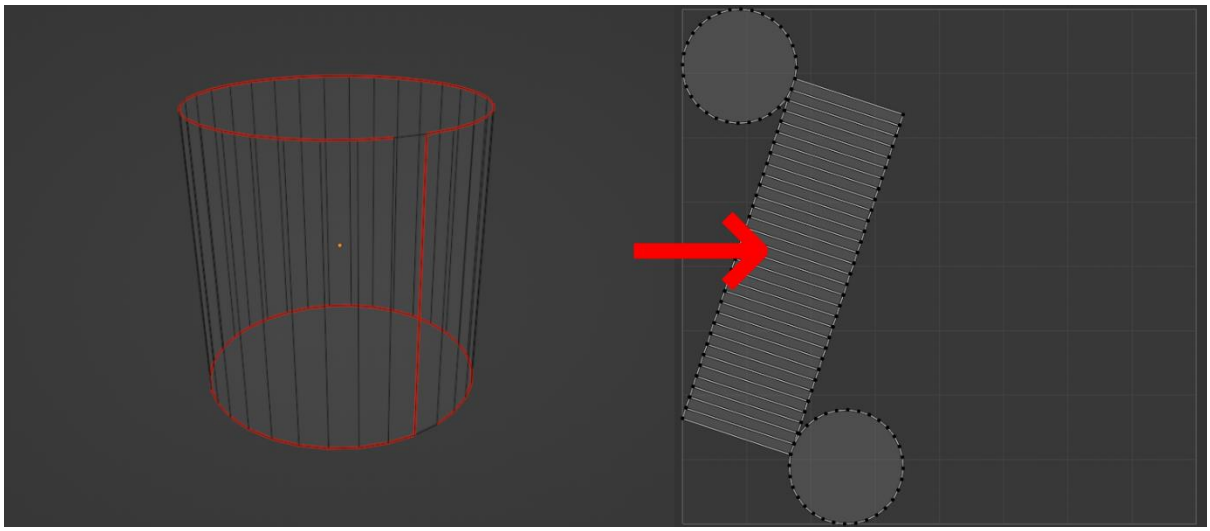


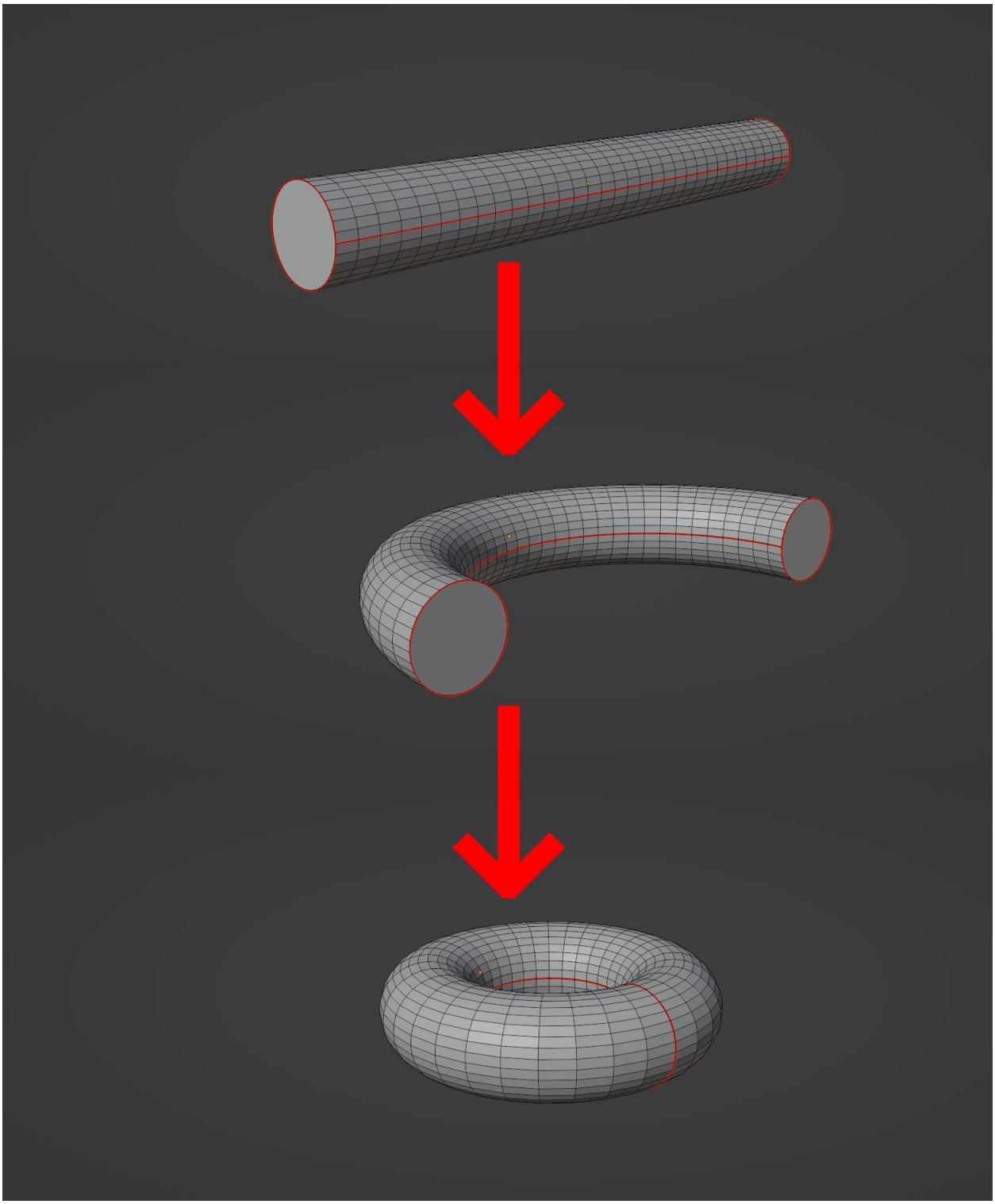


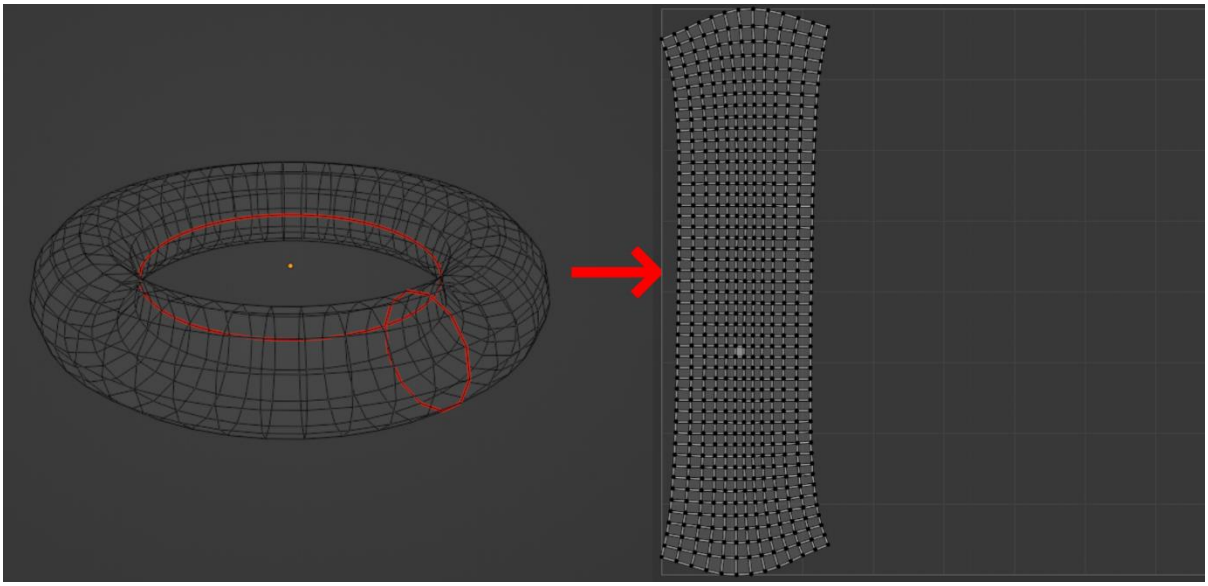


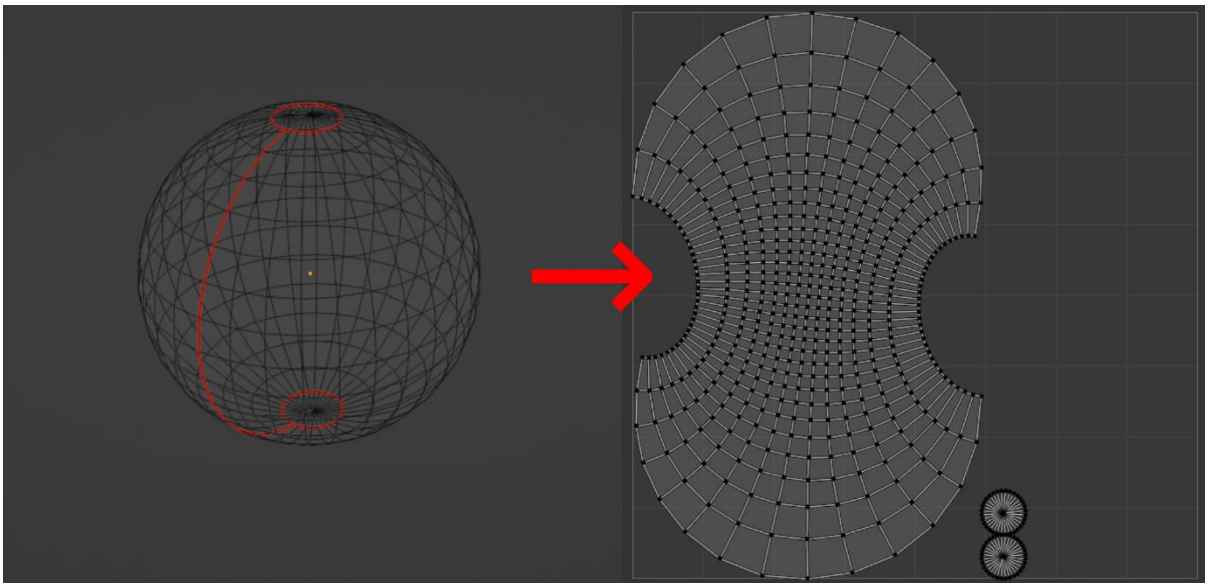


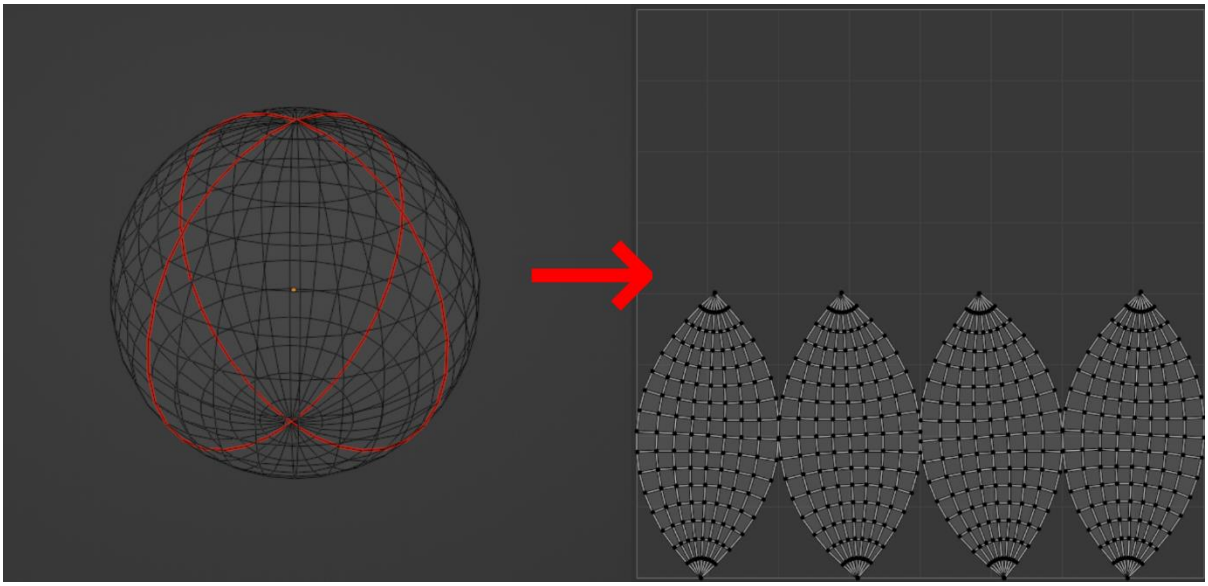


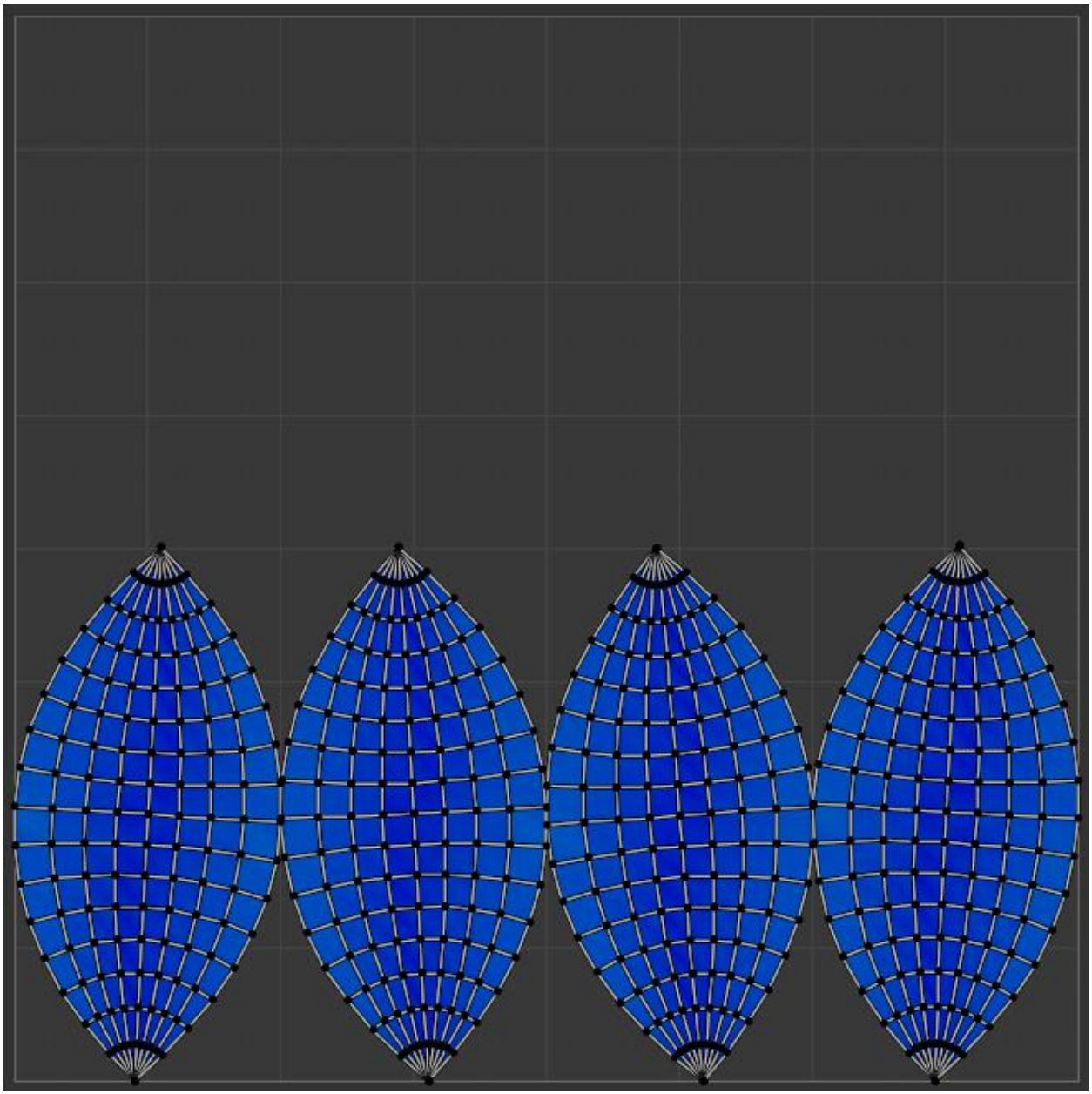


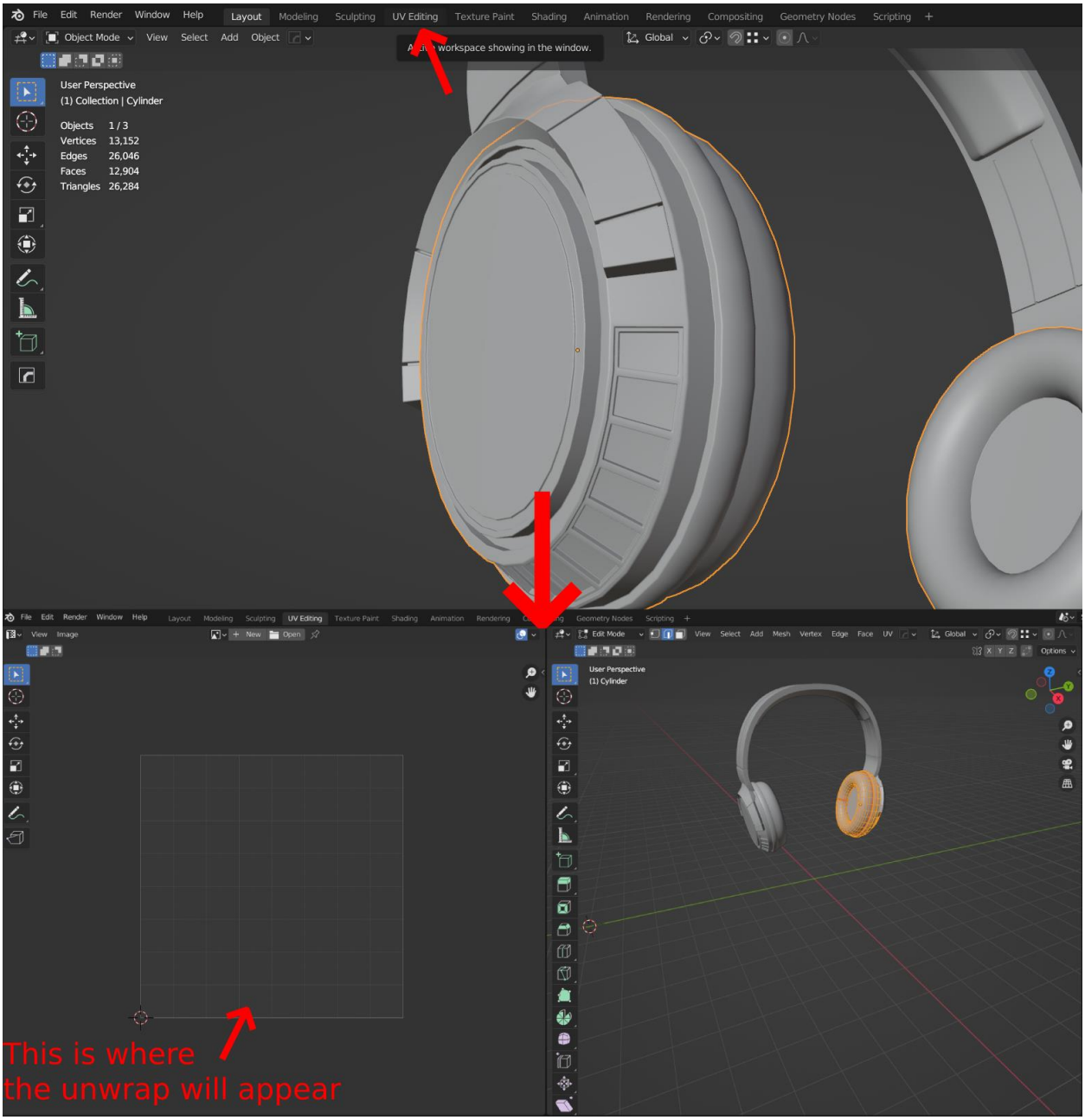


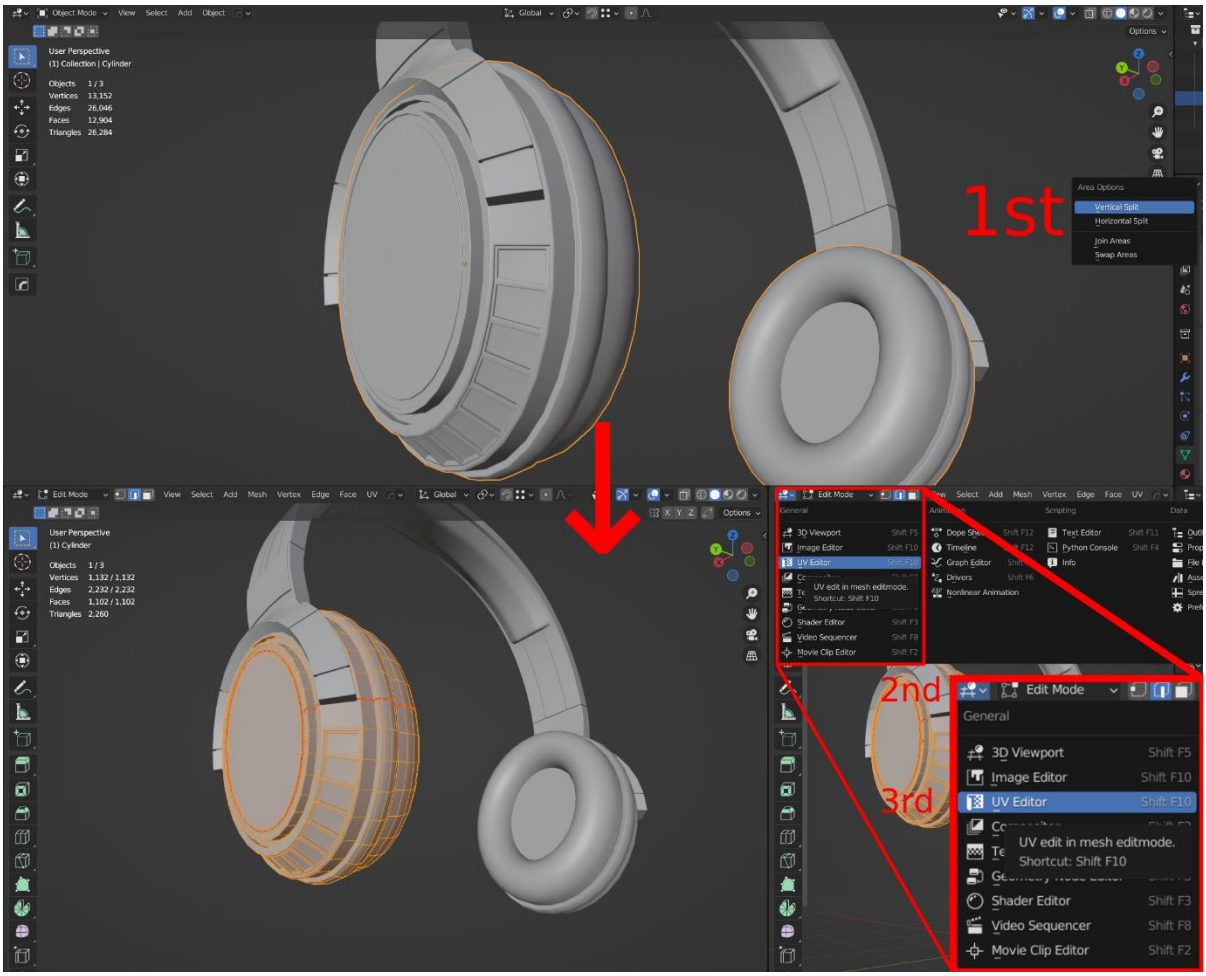


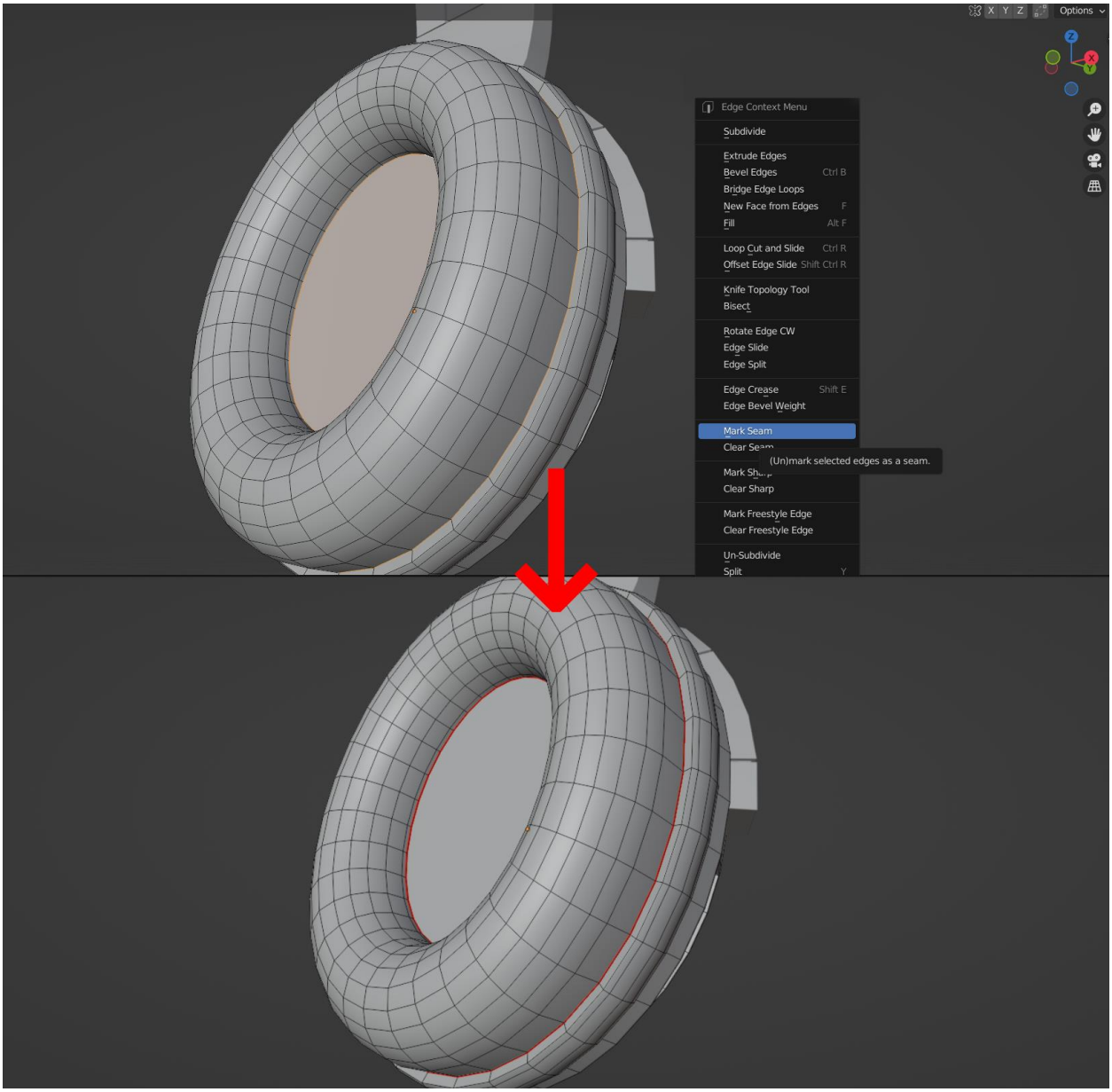


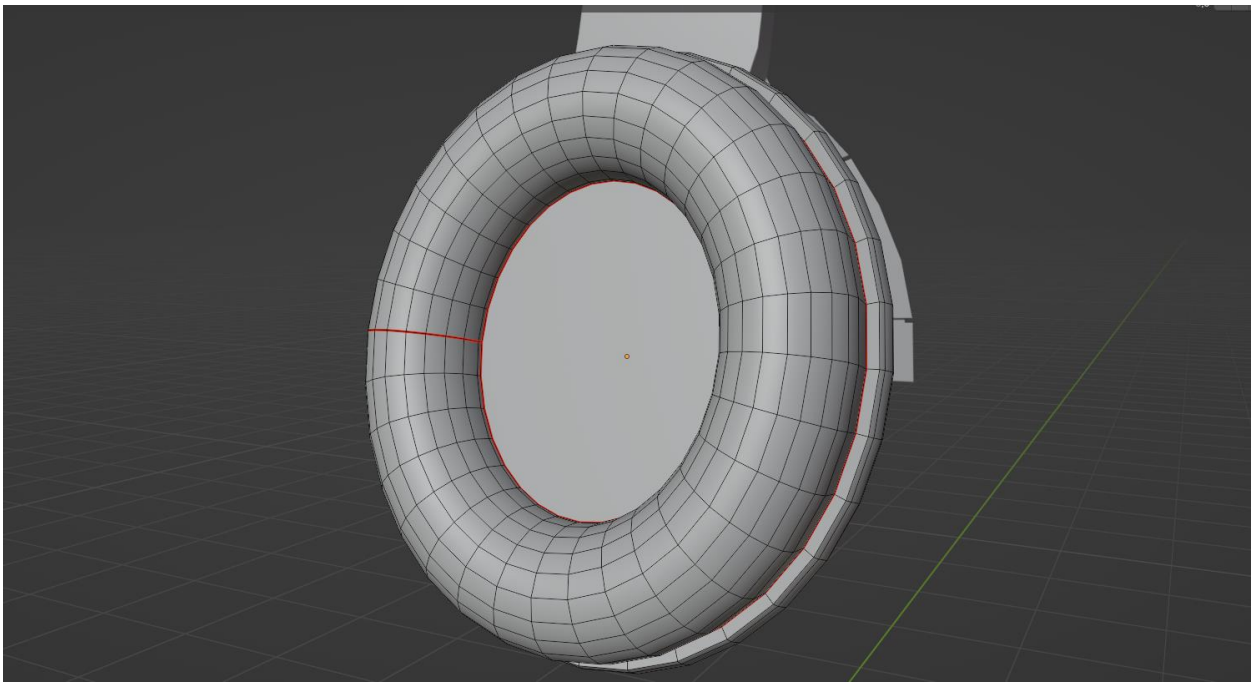


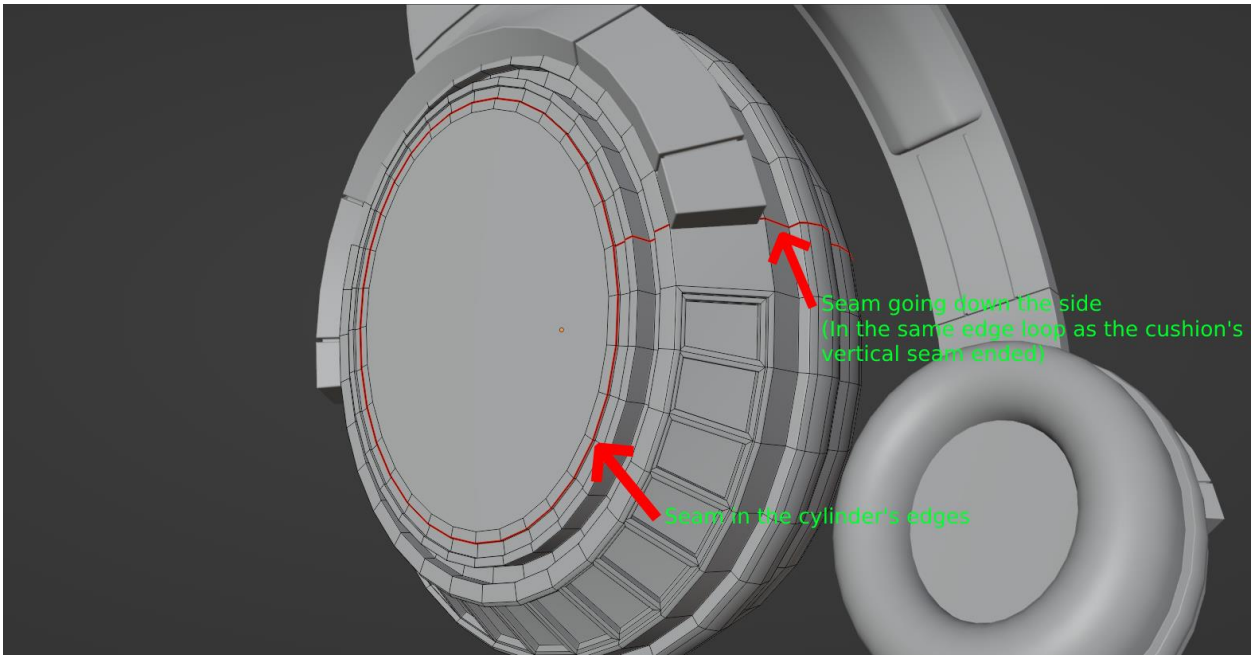


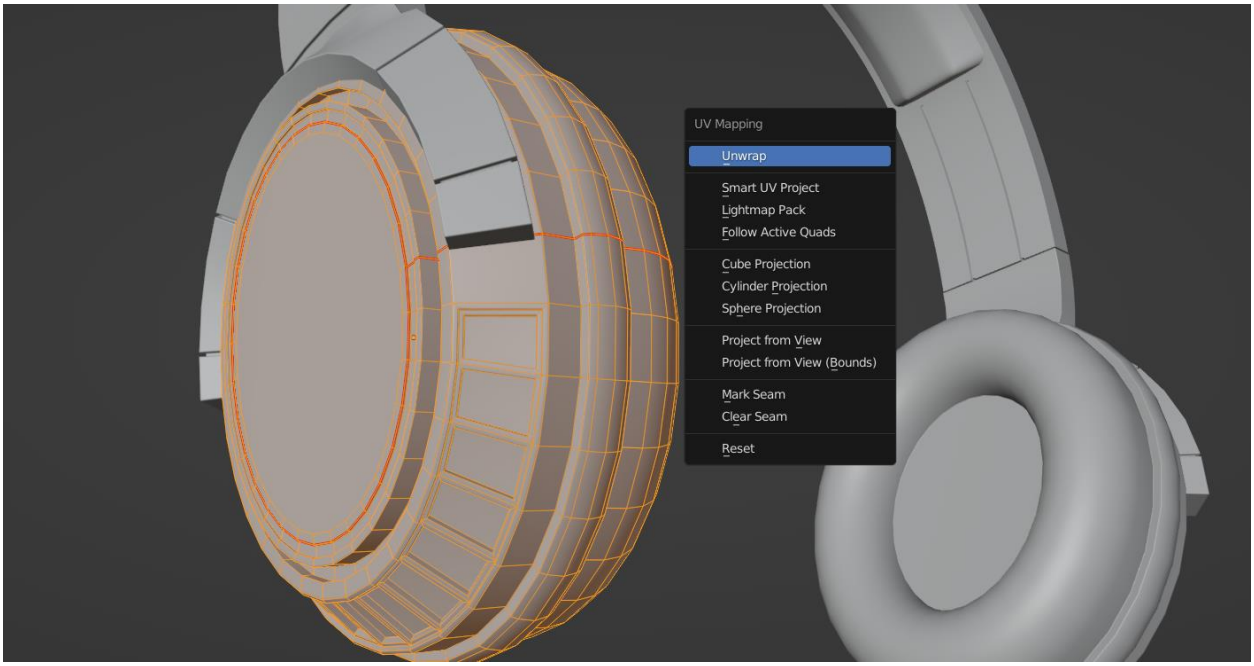

File Edit Render Window Help
Layout Modeling Sculpting UV Editing Texture Paint Shading Animation Rendering Compositing Geometry Nodes Scripting
Object Mode View Select Add Object
Global
User Perspective
(1) Collection | Cylinder
Objects 1 / 3
Vertices 13,152
Edges 26,046
Faces 12,904
Triangles 26,284
View Image
New Open
Edit Mode View Select Add Mesh Vertex Edge Face UV
Global
Options
User Perspective
(1) Cylinder
This is where
the unwrap will appear

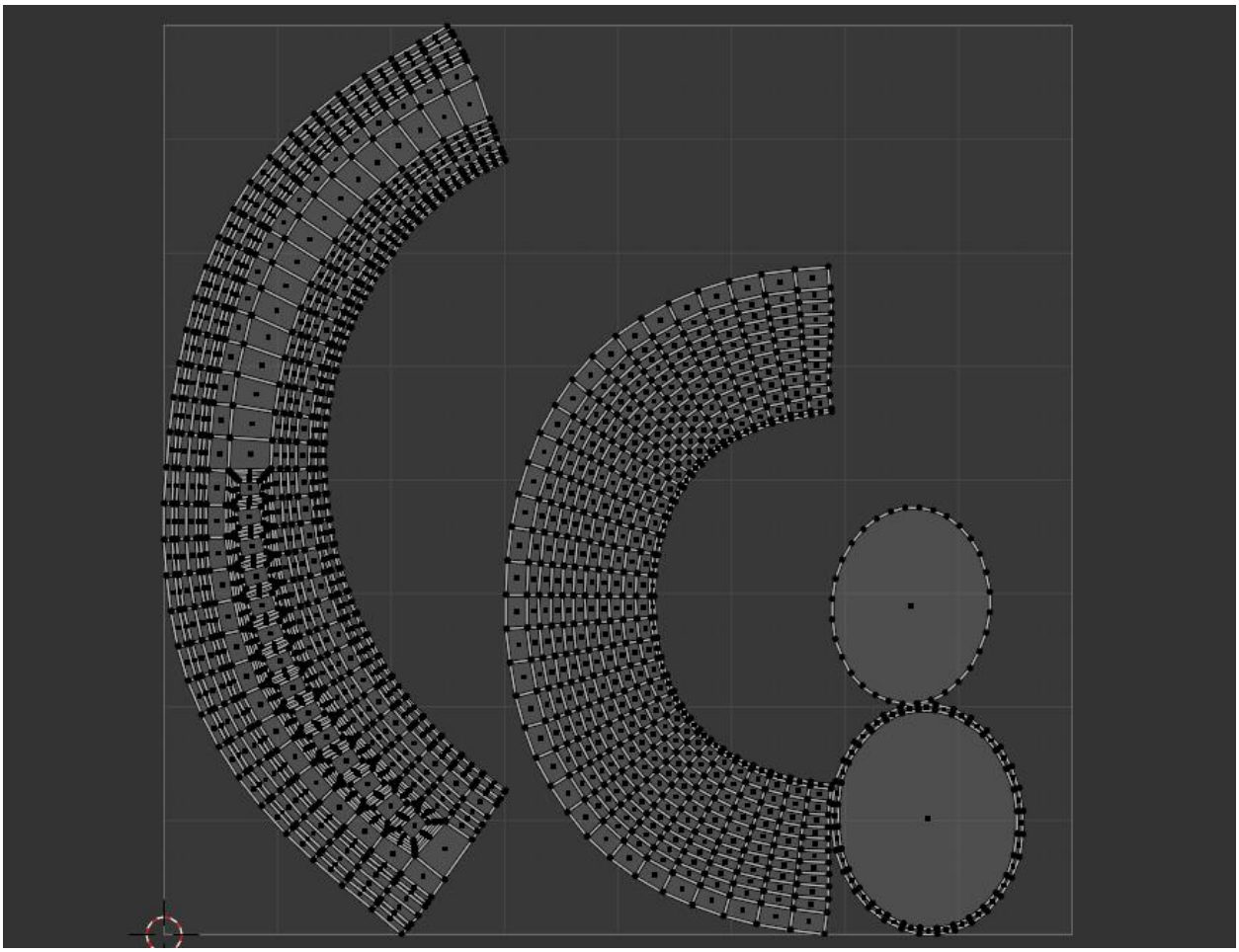

1st
2nd
3rd
Edit Mode
General
3D Viewport Shift F5
Image Editor Shift F10
UV Editor Shift F10
UV edit in mesh editmode.
Shortcut: Shift F10
Shader Editor Shift F3
Video Sequencer Shift F8
Movie Clip Editor Shift F2

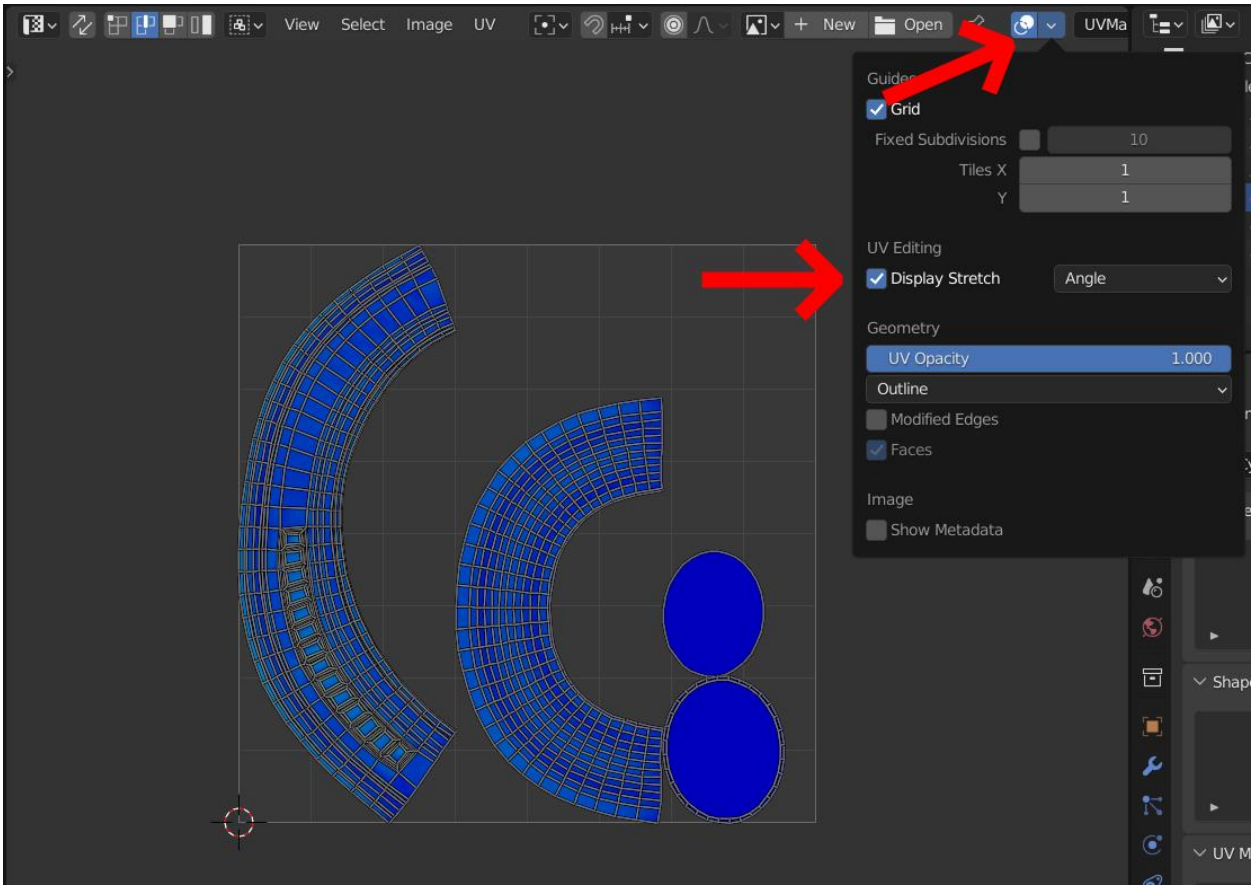

Edge Context Menu
Subdivide
Extrude Edges
Bevel Edges Ctrl B
Bridge Edge Loops
New Face from Edges F
Fill Alt F
Loop Cut and Slide Ctrl R
Offset Edge Slide Shift Ctrl R
Knife Topology Tool
Bisect
Rotate Edge CW
Edge Slide
Edge Split
Edge Crease Shift E
Edge Bevel Weight
Mark Seam
Clear Seam
(Un)mark selected edges as a seam.
Clear Sharp
Mark Freestyle Edge
Clear Freestyle Edge
Un-Subdivide
Split Y
Options

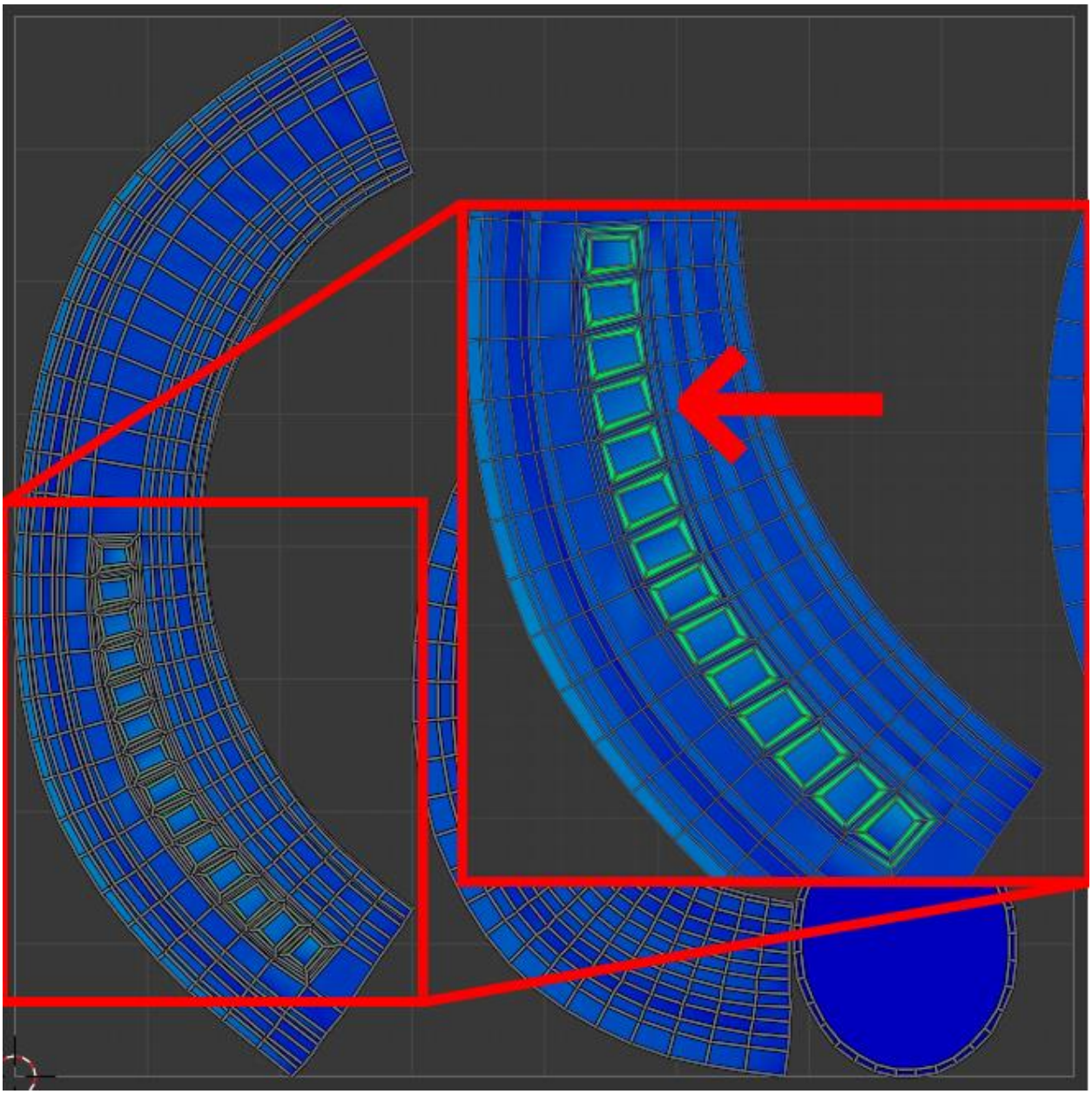


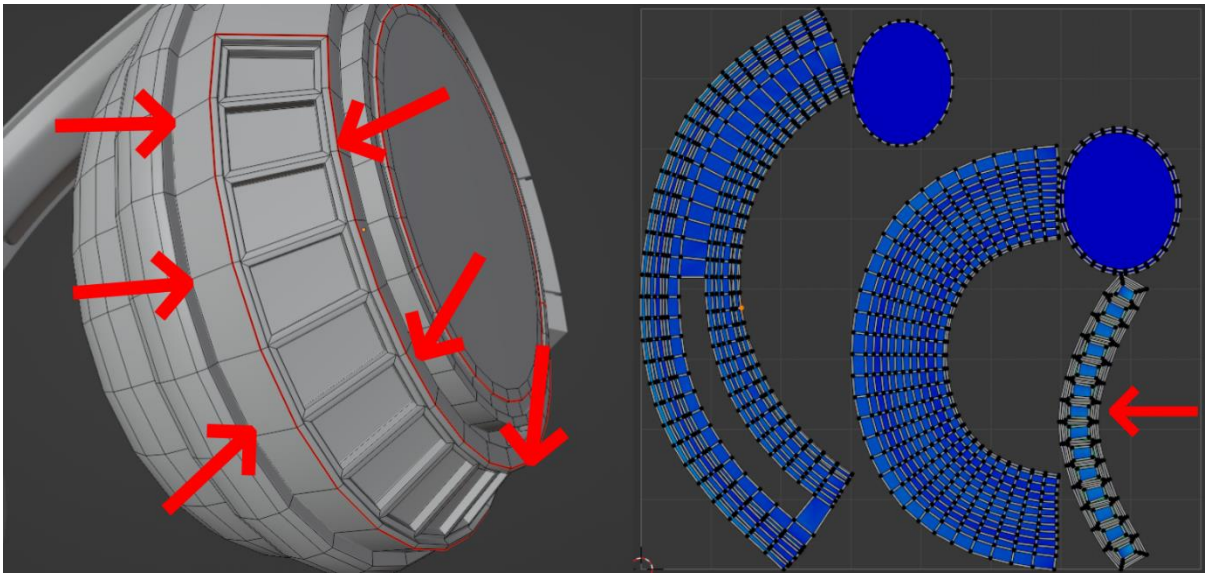

Seam going down the side
(In the same edge loop as the cushion's
vertical seam ended)
Seam in the cylinder's edges

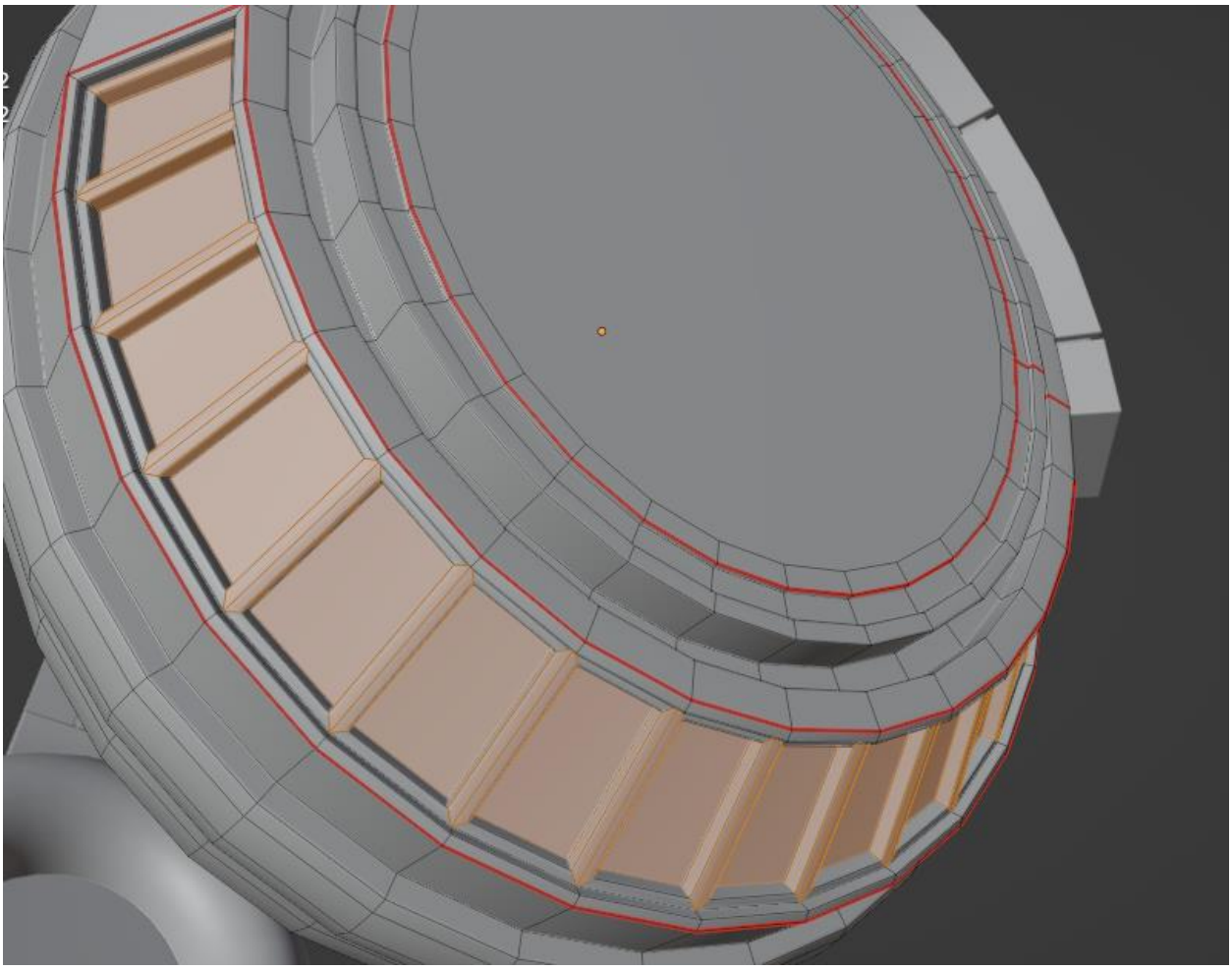

UV Mapping
Unwrap
Smart UV Project
Lightmap Pack
Follow Active Quads
Cube Projection
Cylinder Projection
Sphere Projection
Project from View
Project from View (Bounds)
Mark Seam
Clear Seam
Reset

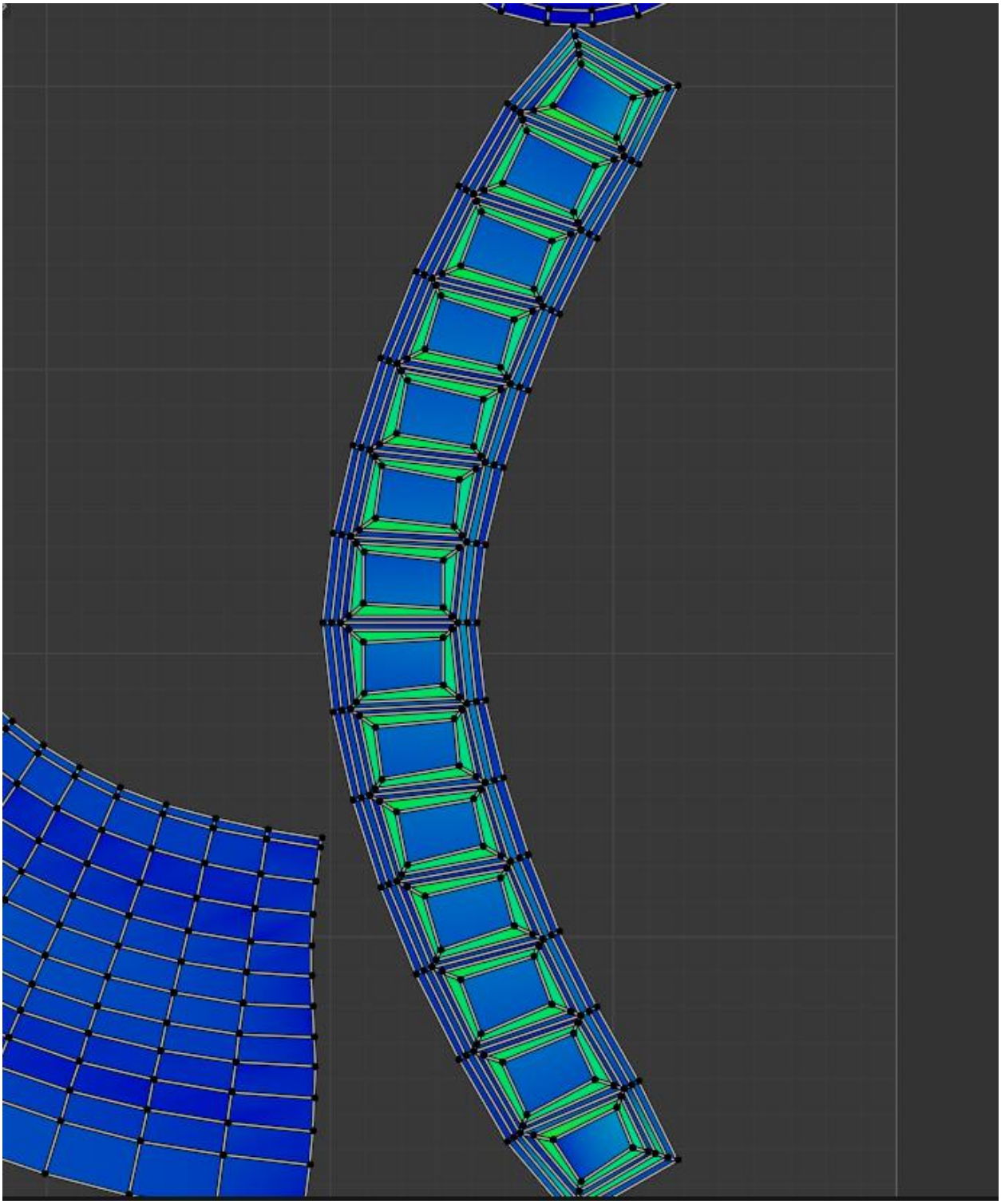


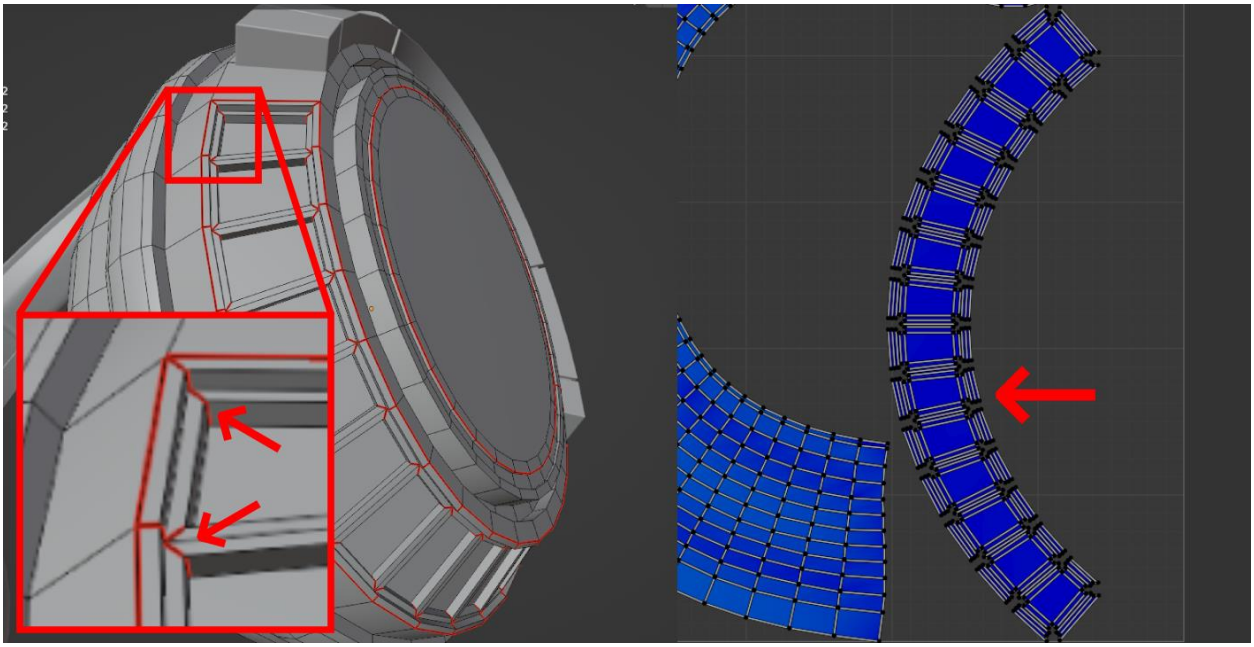

View
Select
Image
UV
New
Open
UVMa
Grid
Fixed Subdivisions
10
Tiles X
1
Y
1
UV Editing
Display Stretch
Angle
Geometry
UV Opacity
1.000
Outline
Modified Edges
Faces
Image
Show Metadata

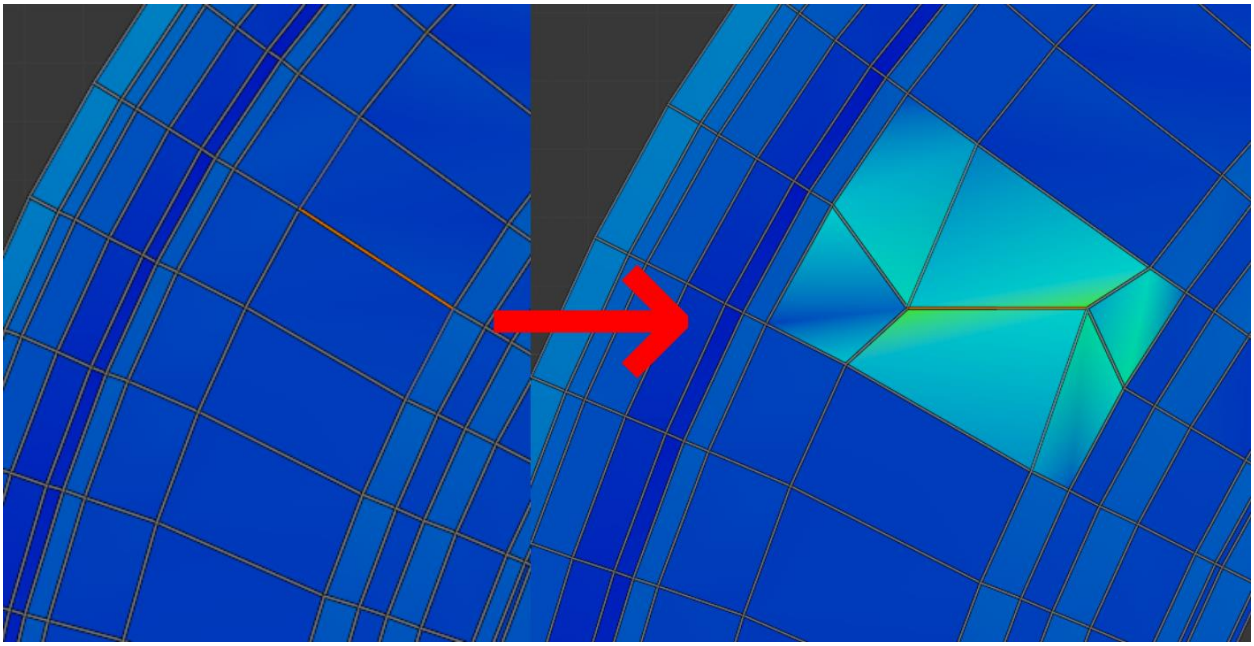


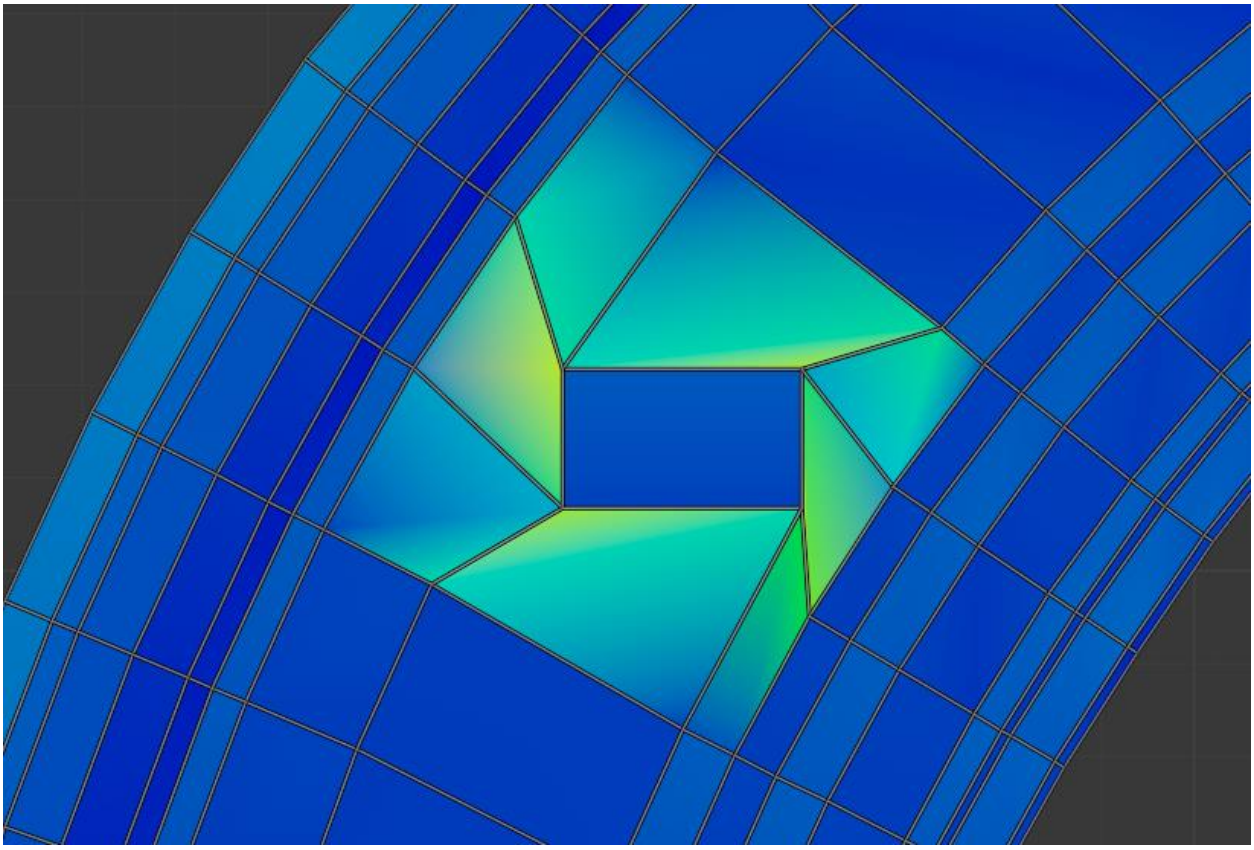


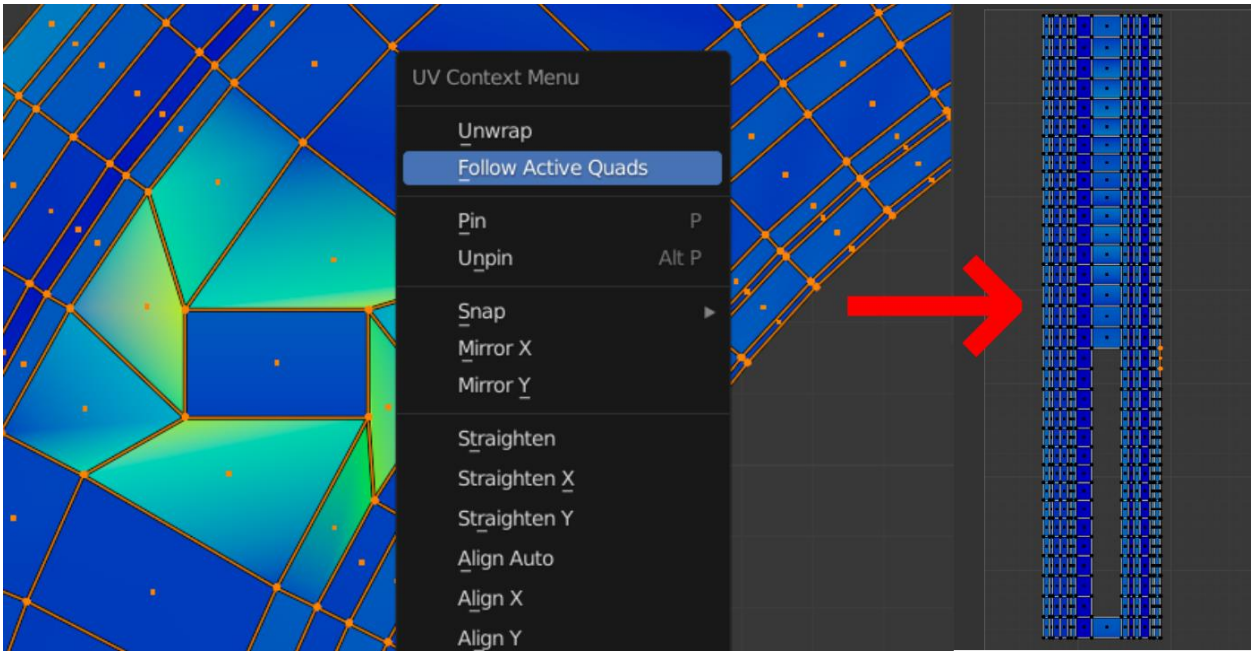


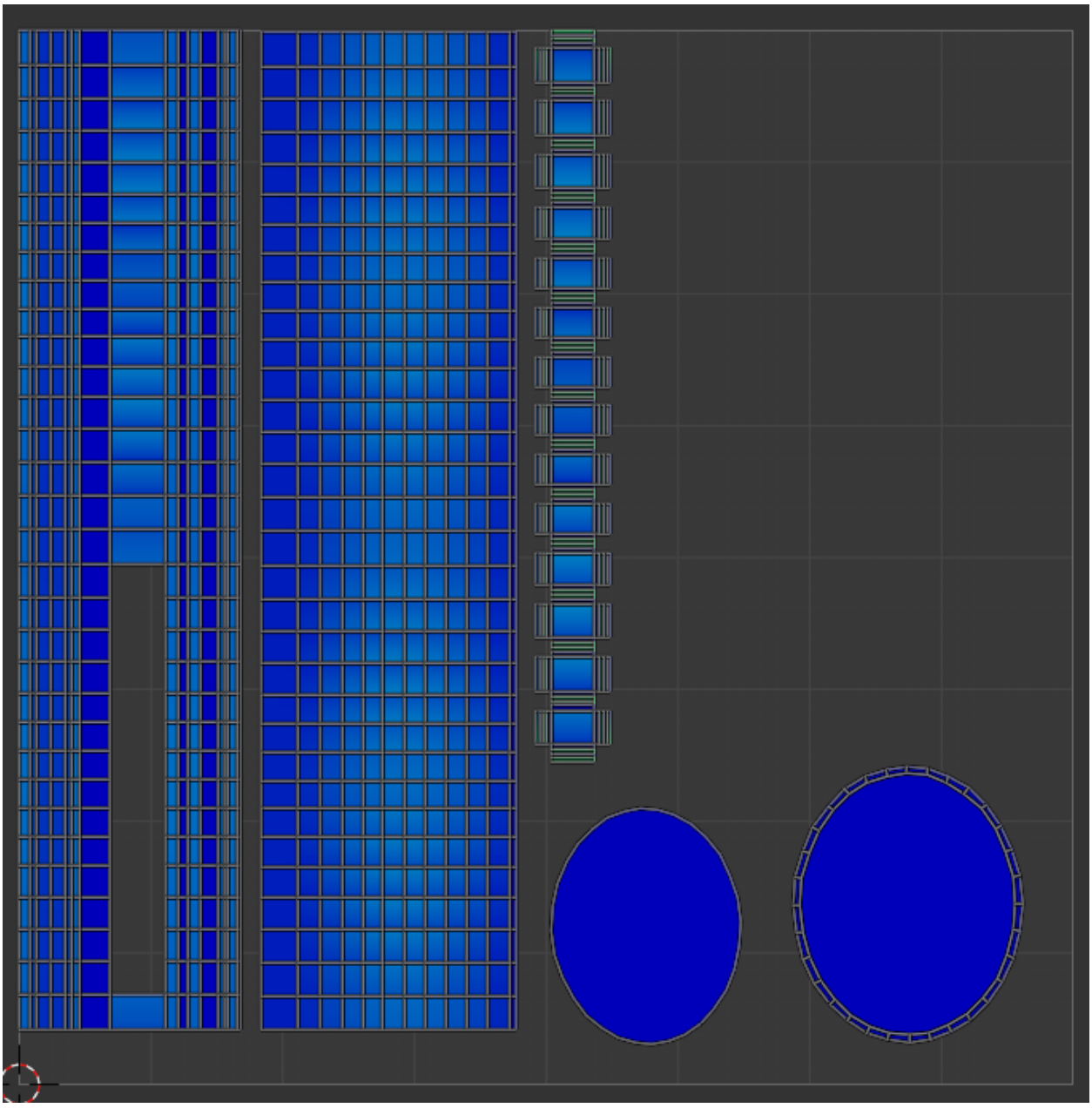


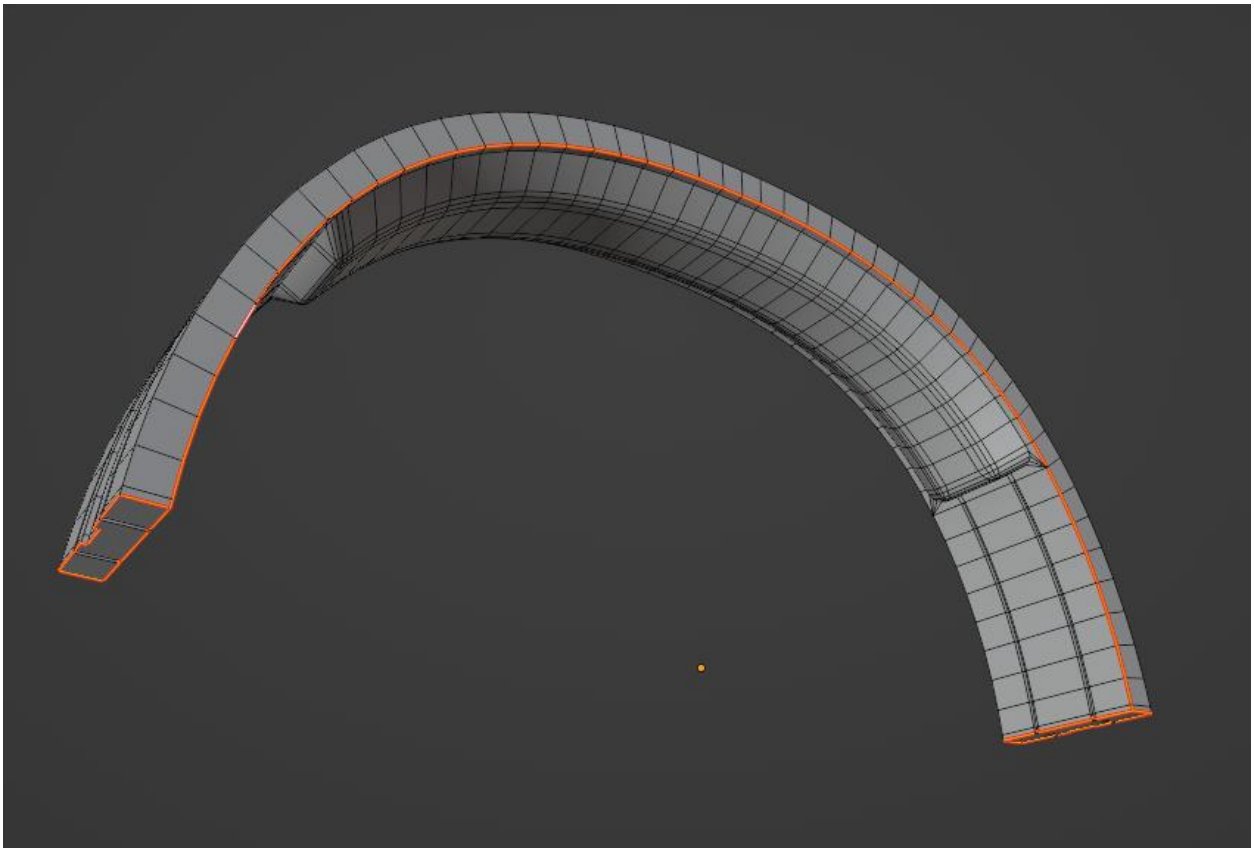


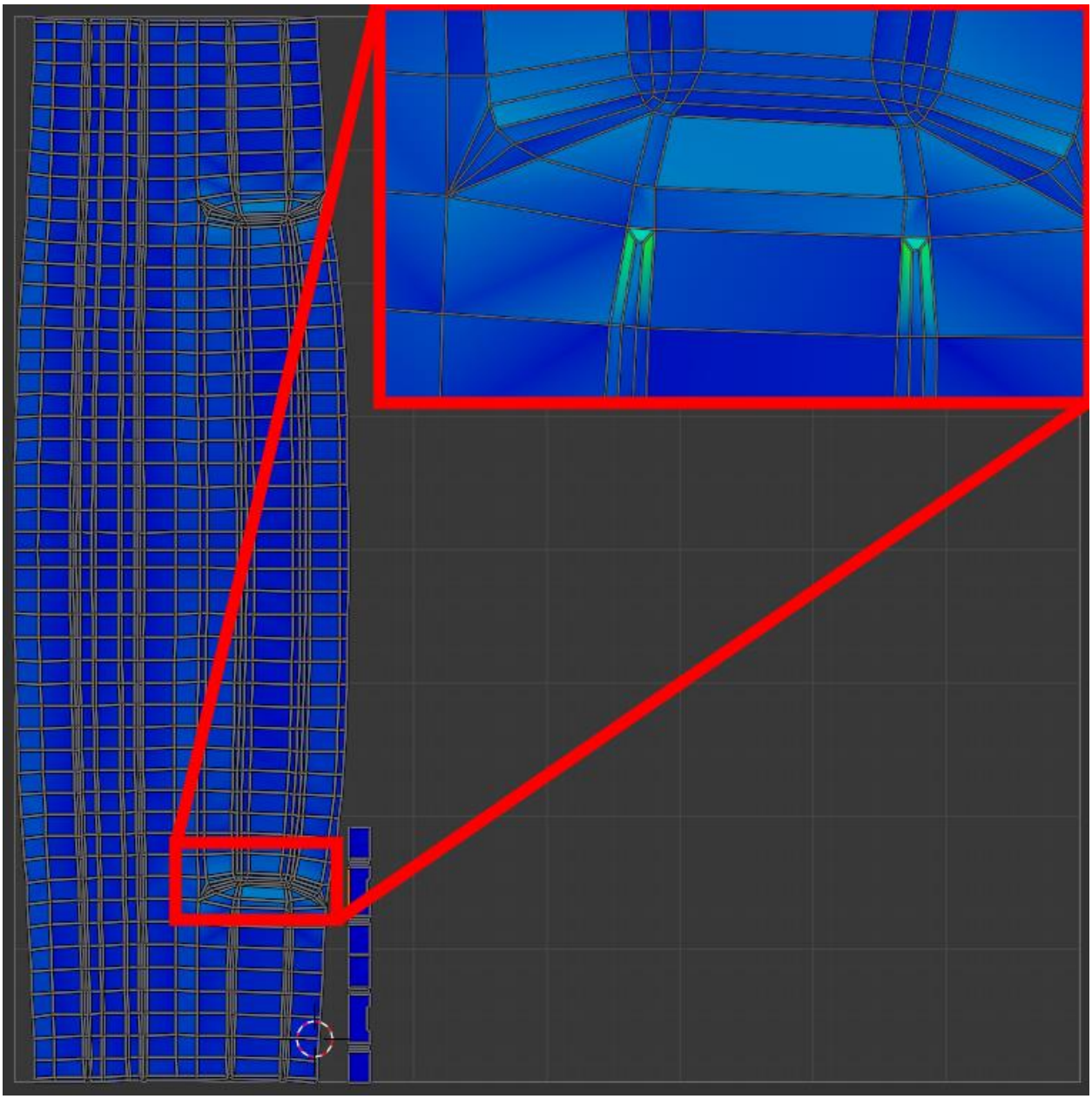


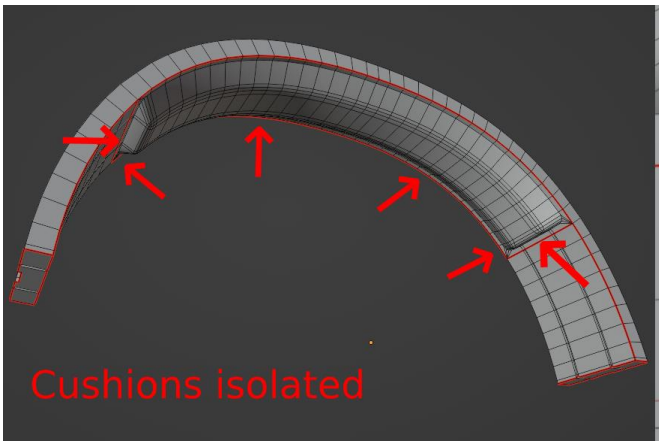


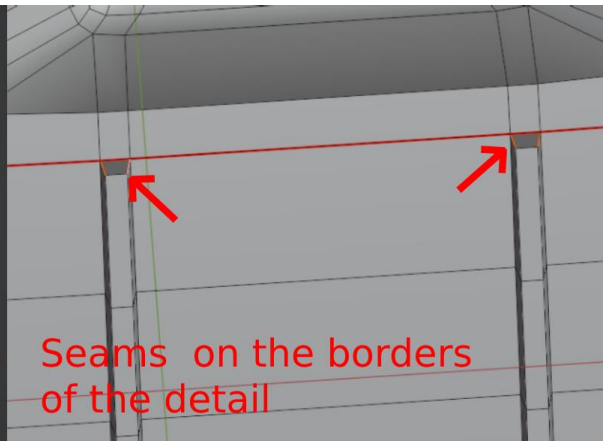

UV Context Menu
Unwrap
Follow Active Quads
Pin P
Unpin Alt P
Snap
Mirror X
Mirror Y
Straighten
Straighten X
Straighten Y
Align Auto
Align X
Align Y

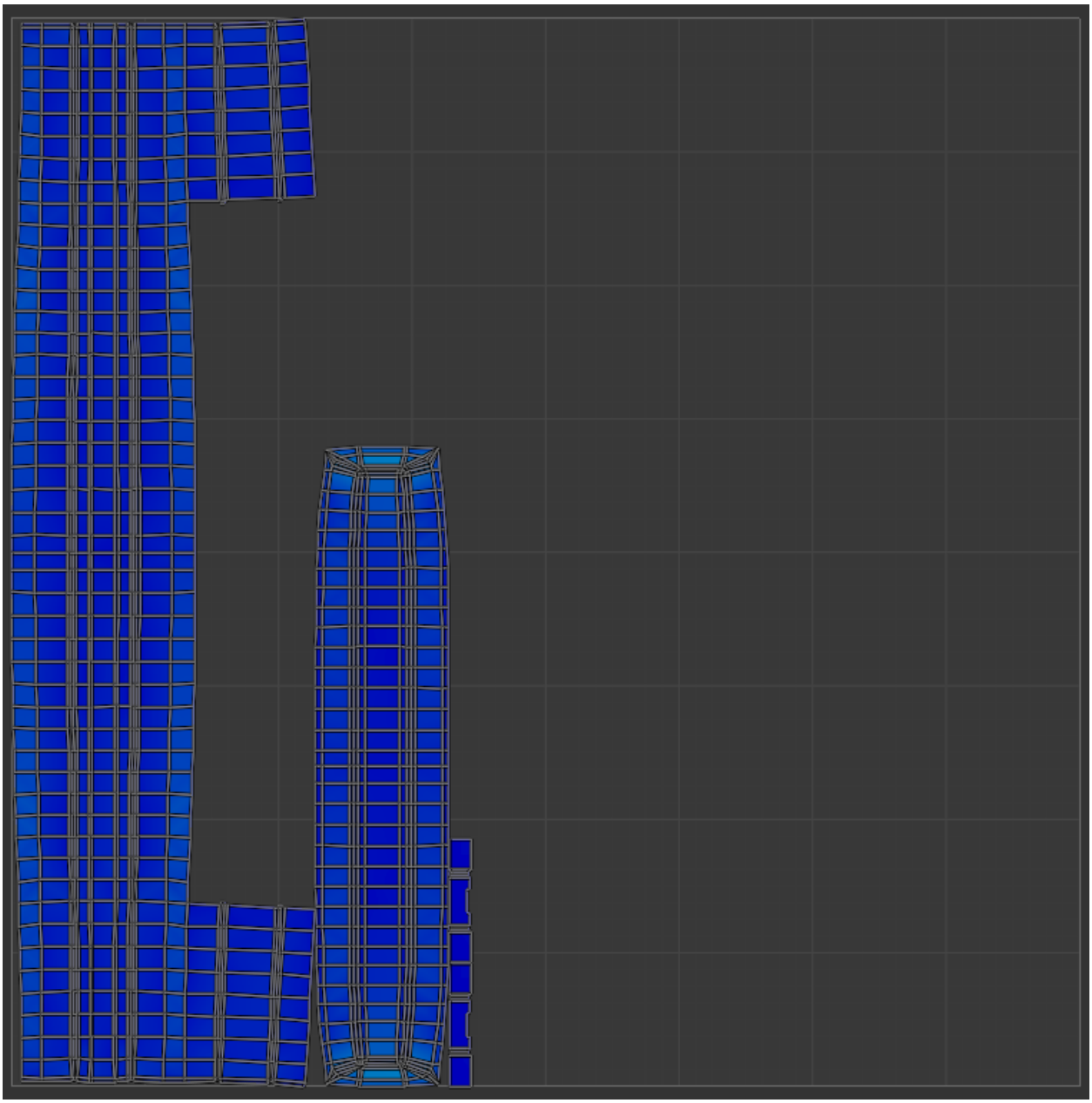


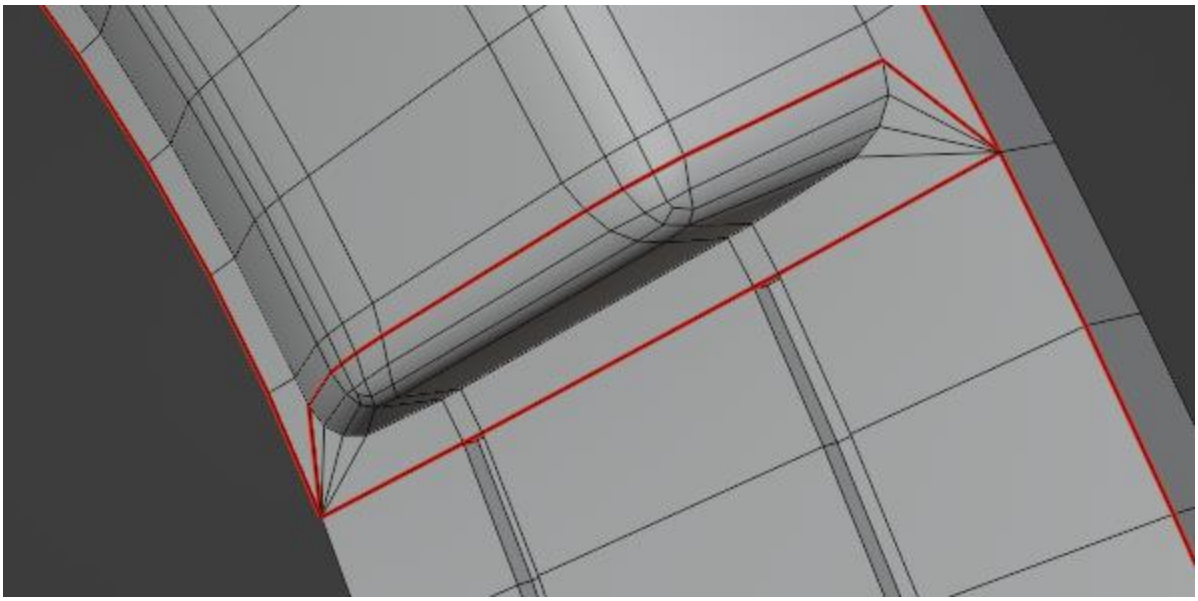


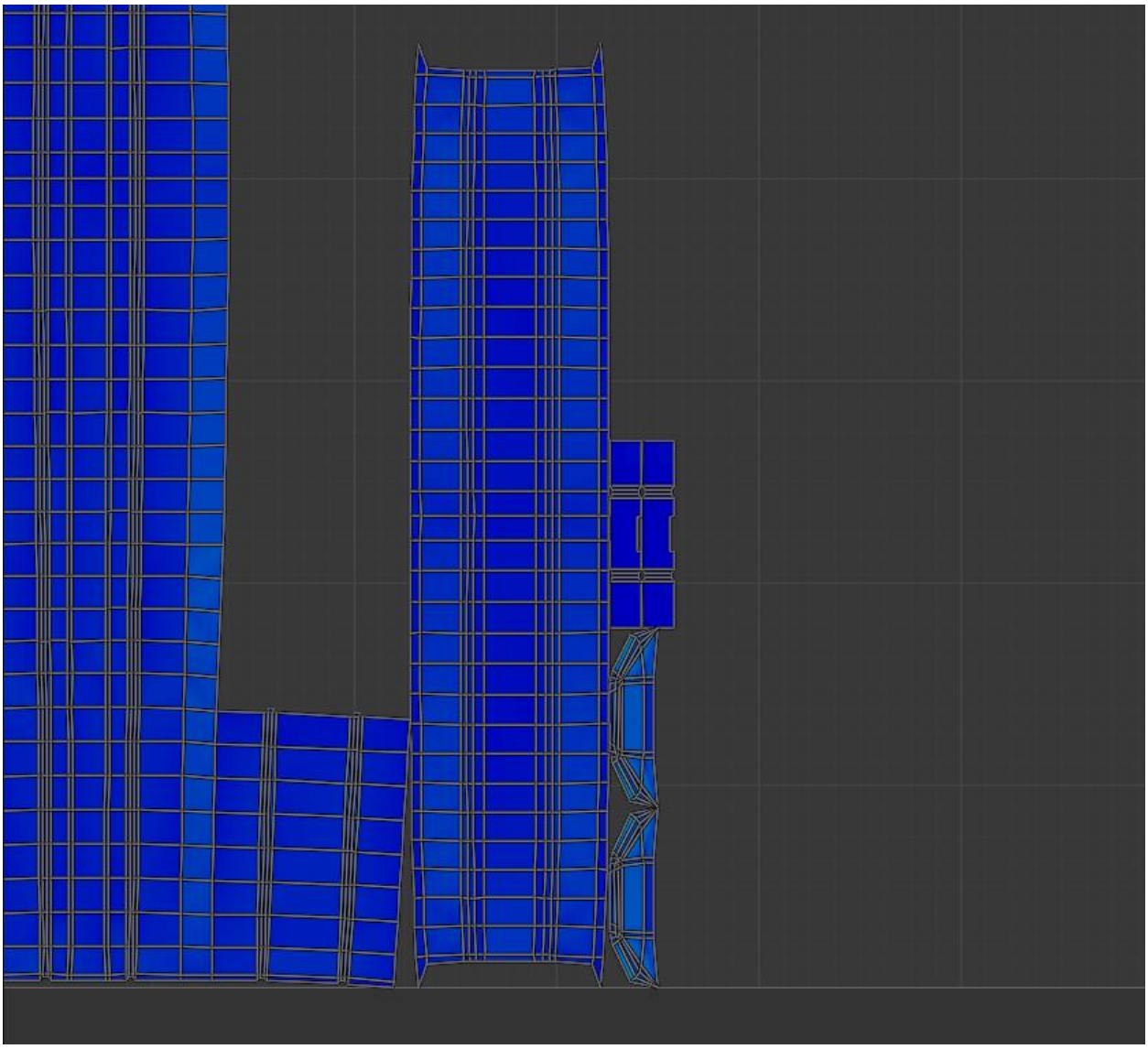


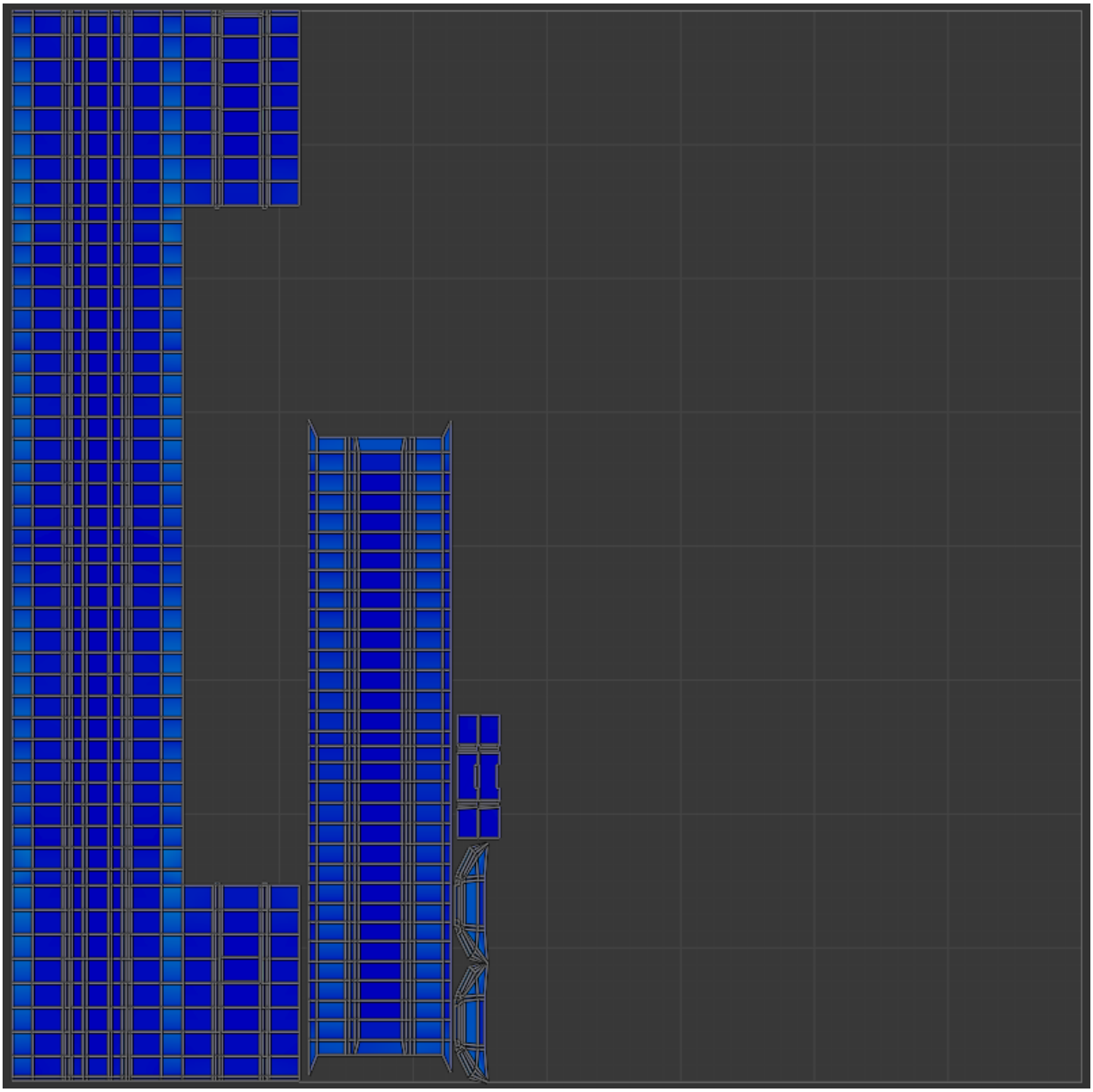

Cushions isolated

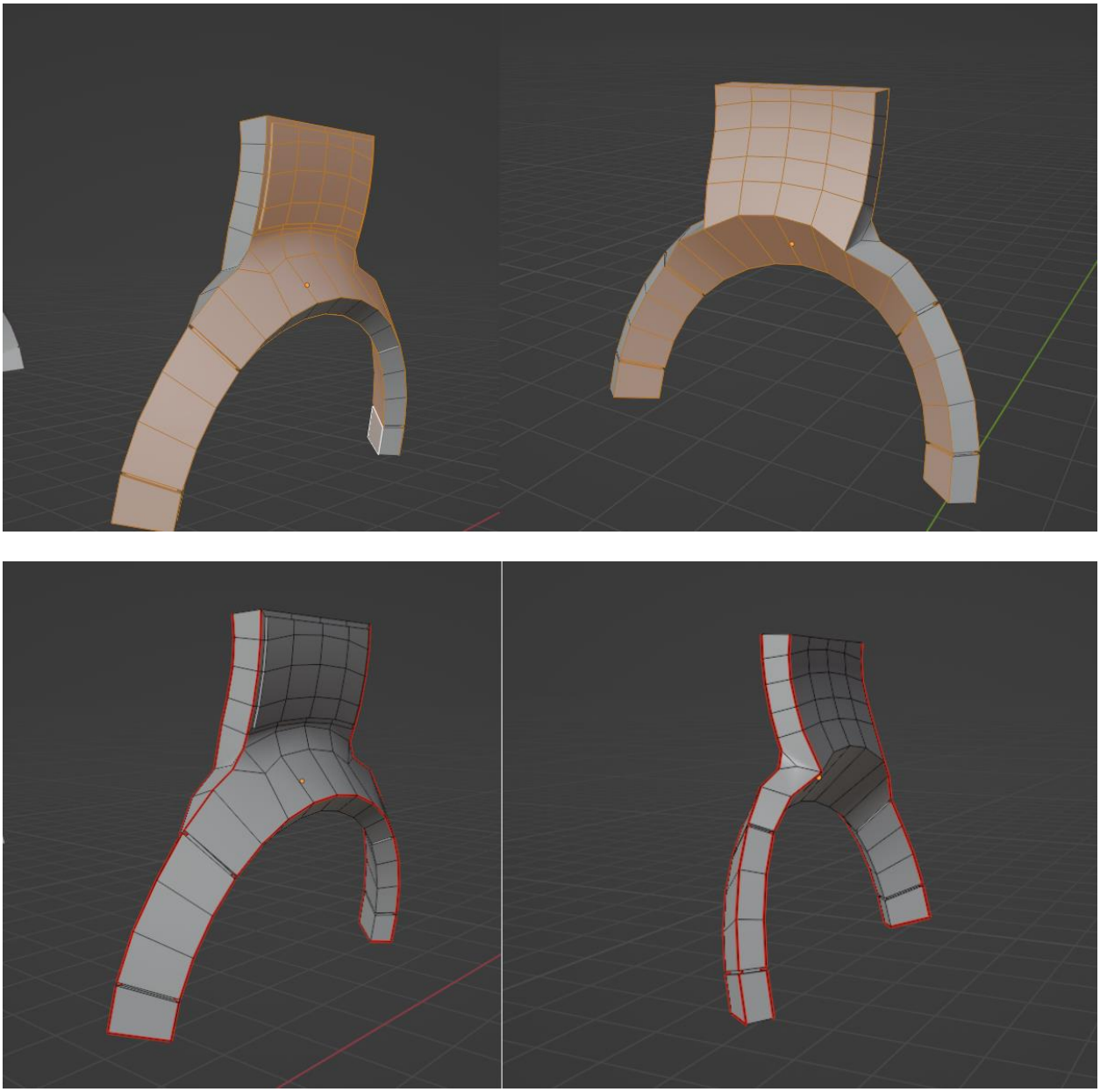

Seams on the borders
of the detail

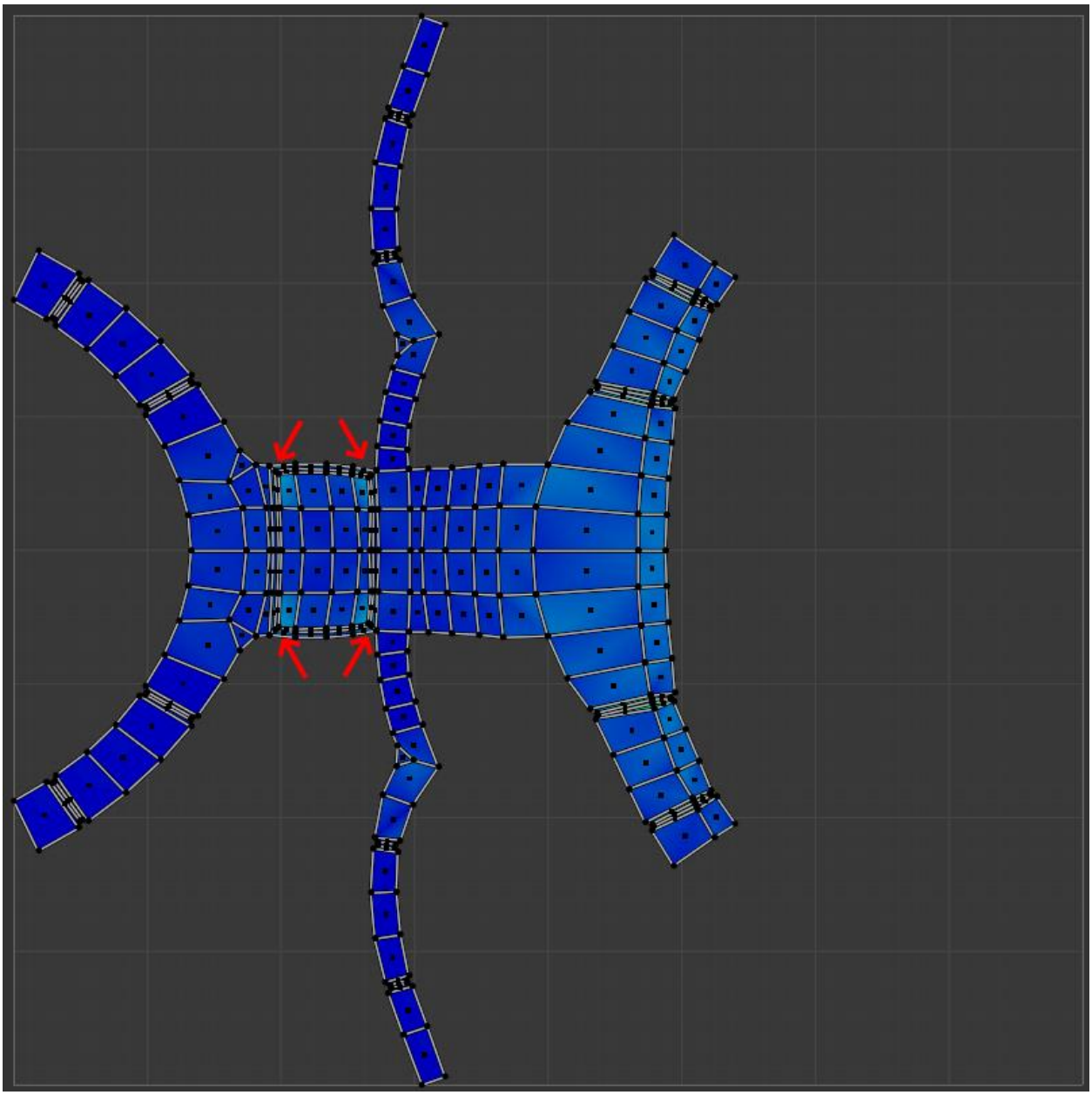


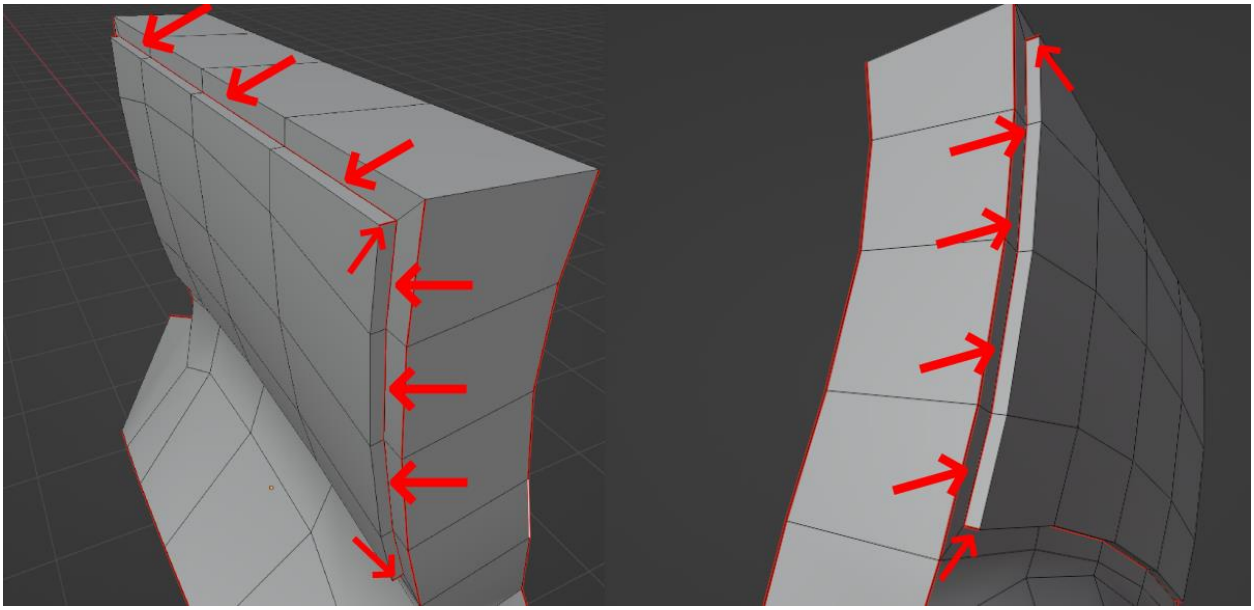


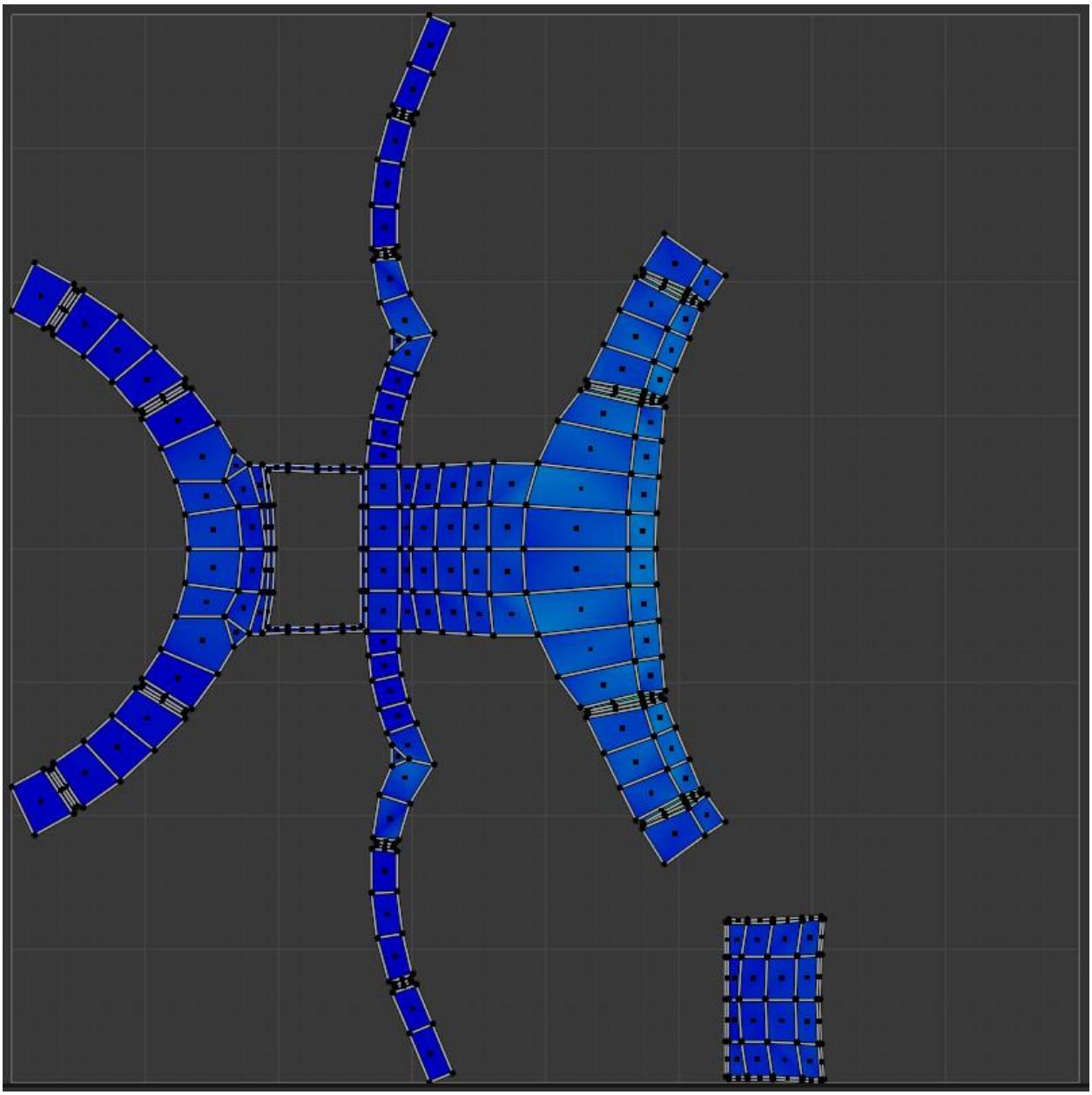


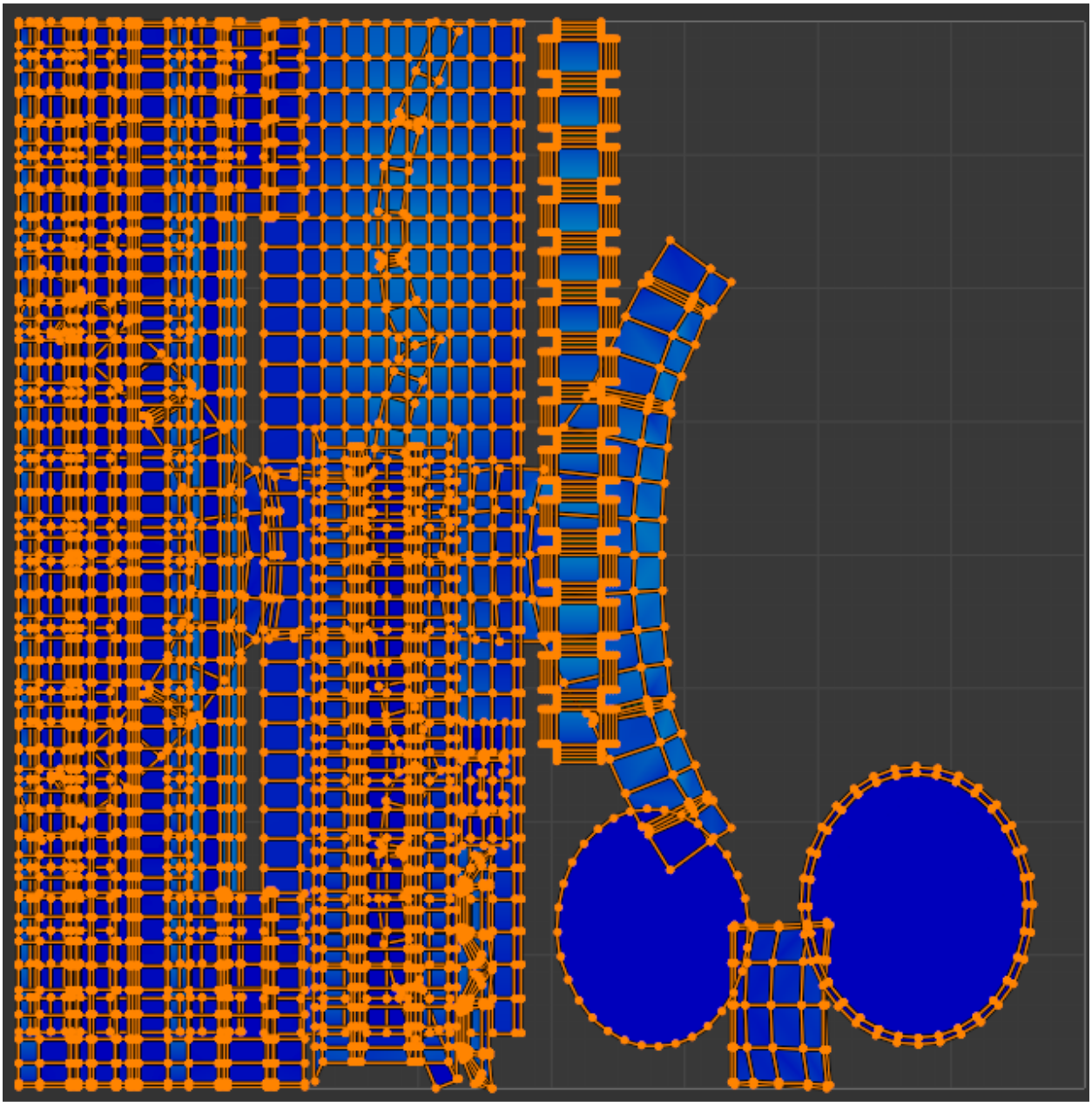


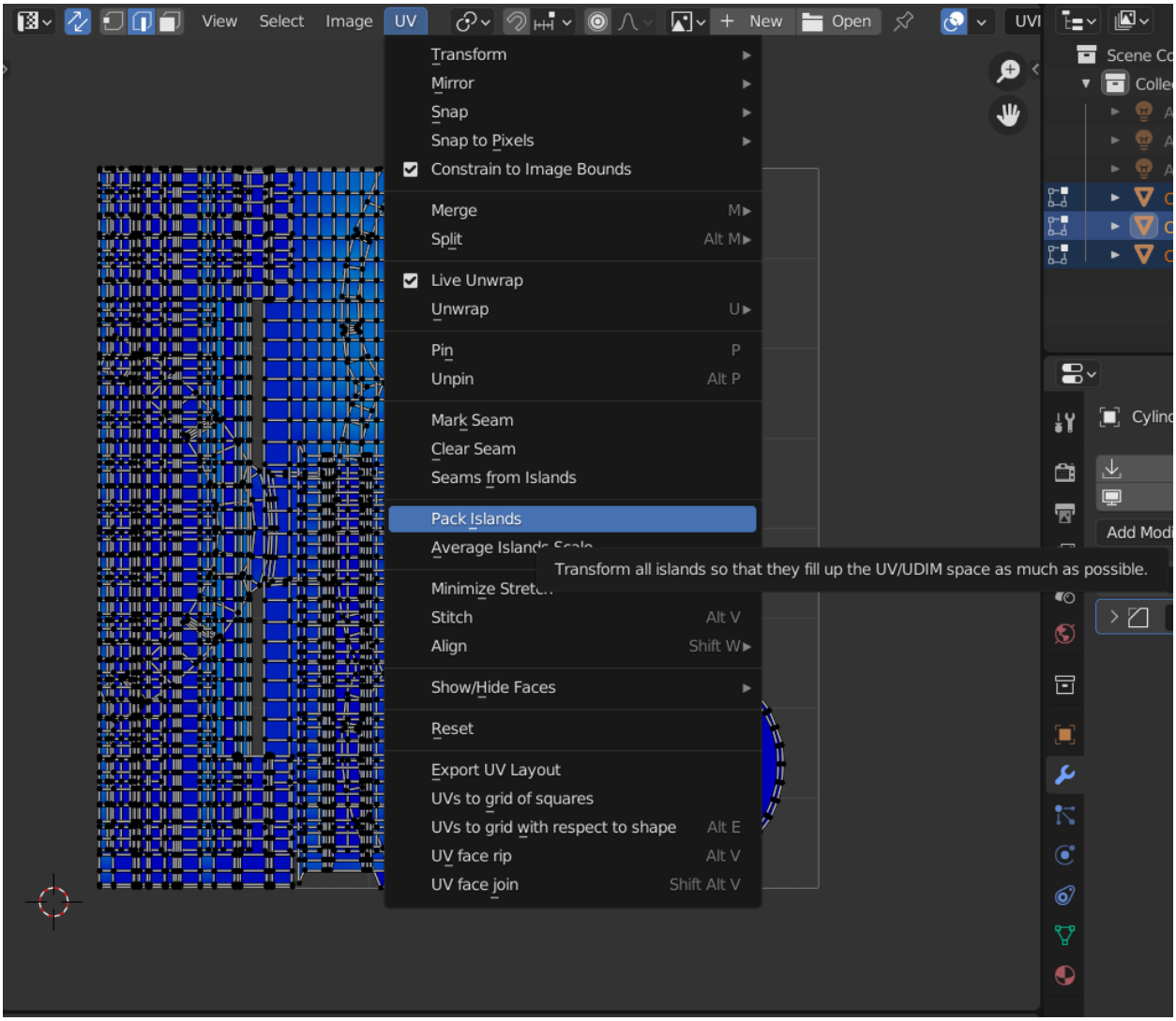


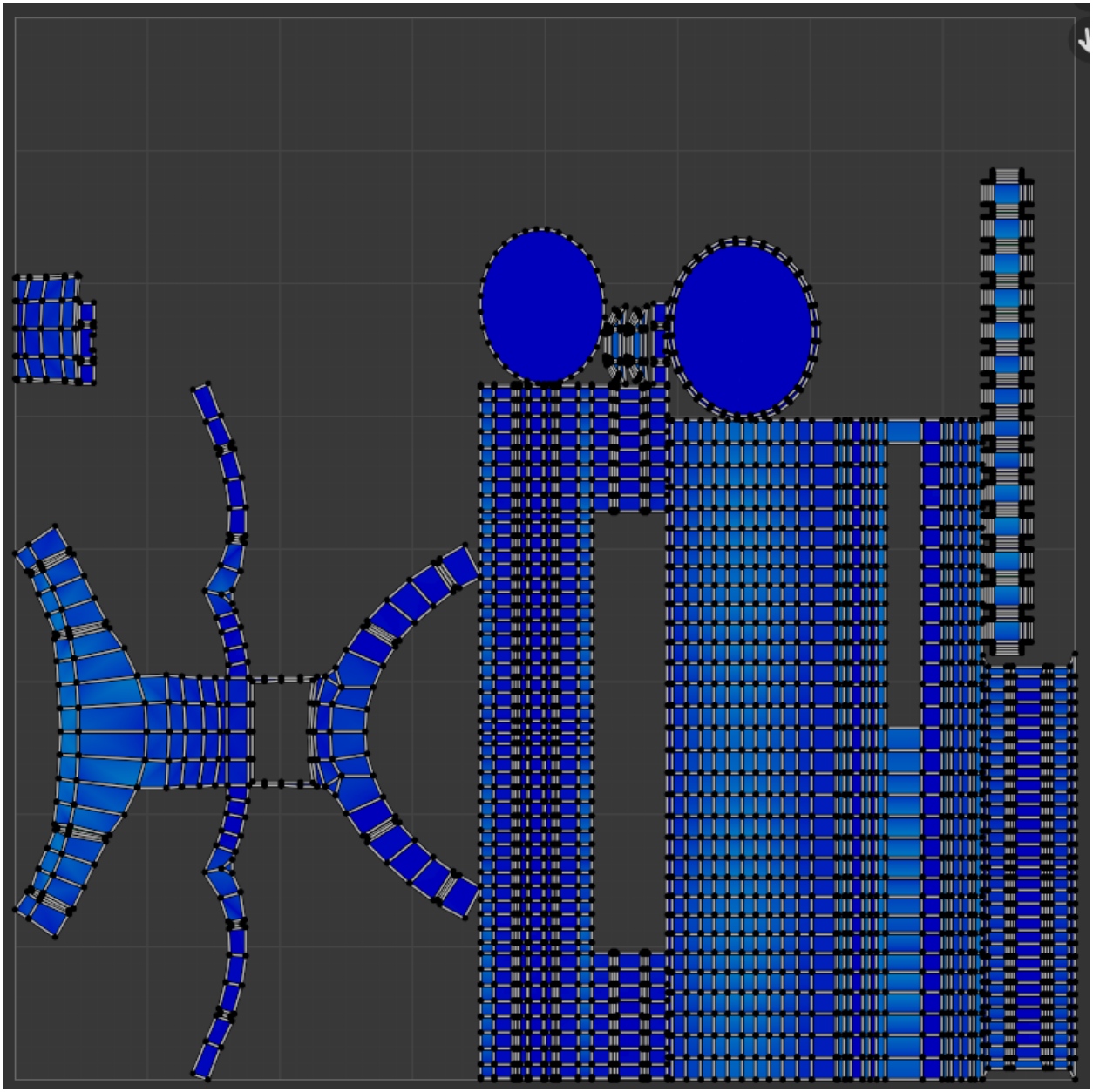


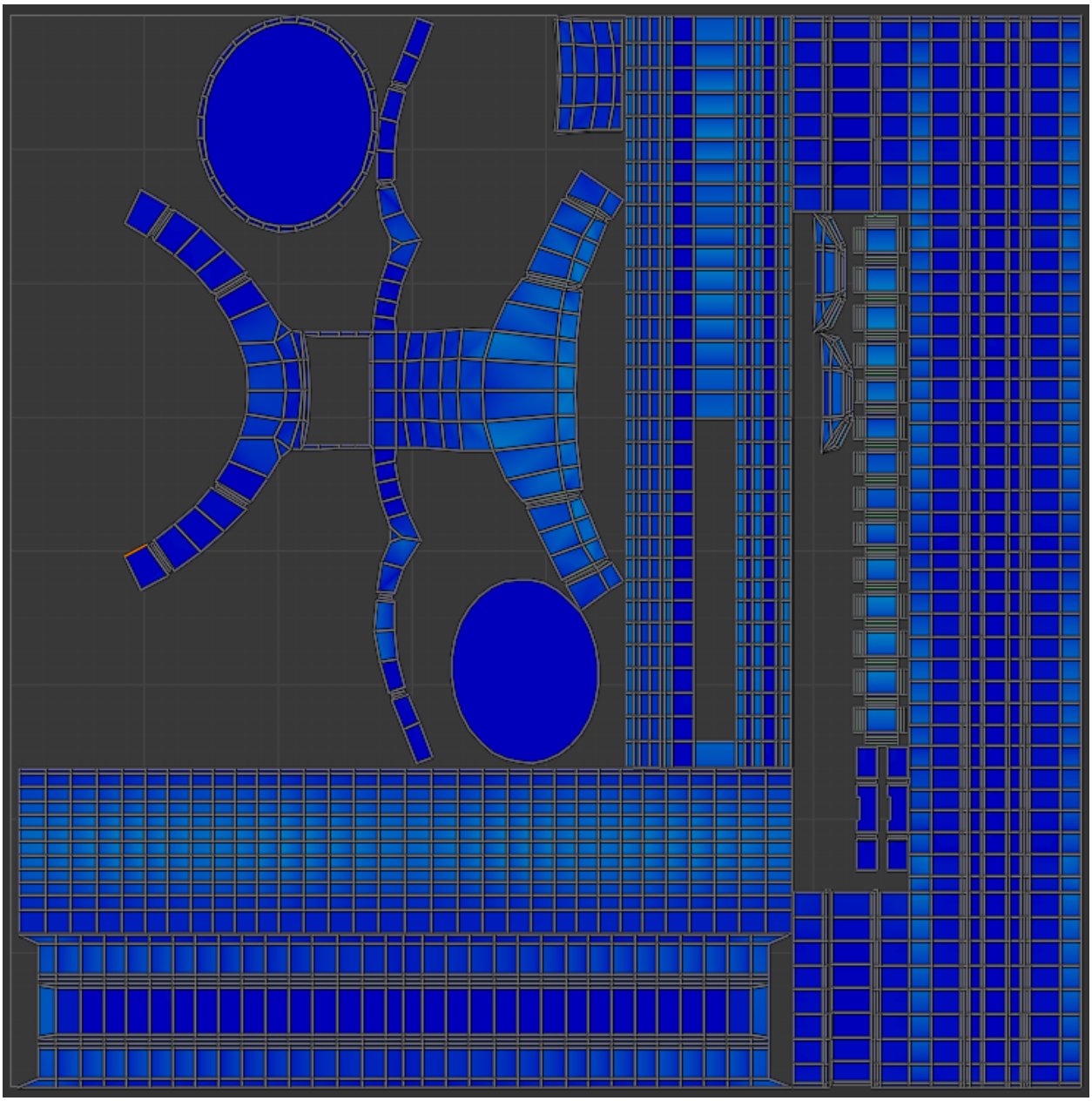


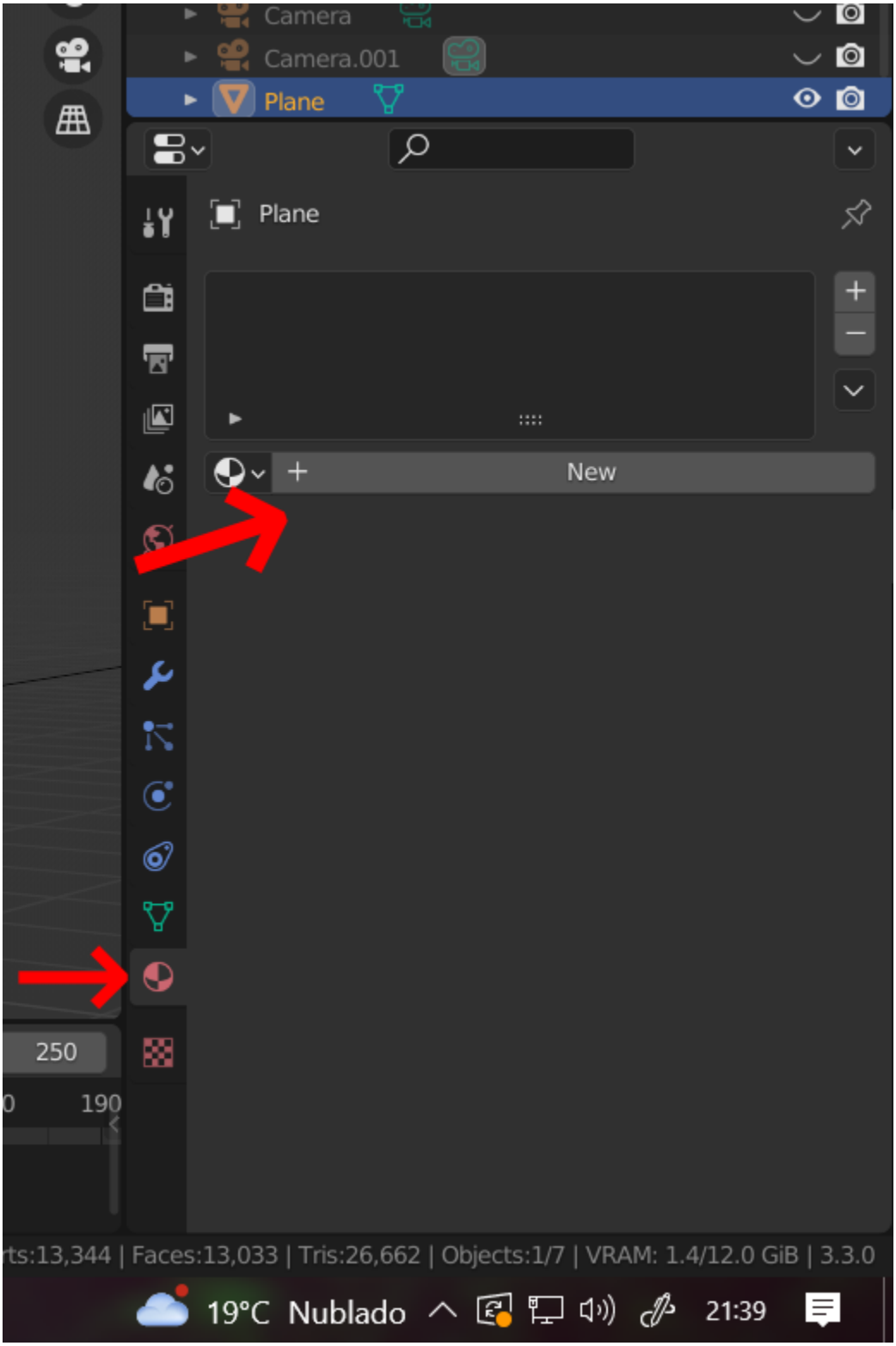


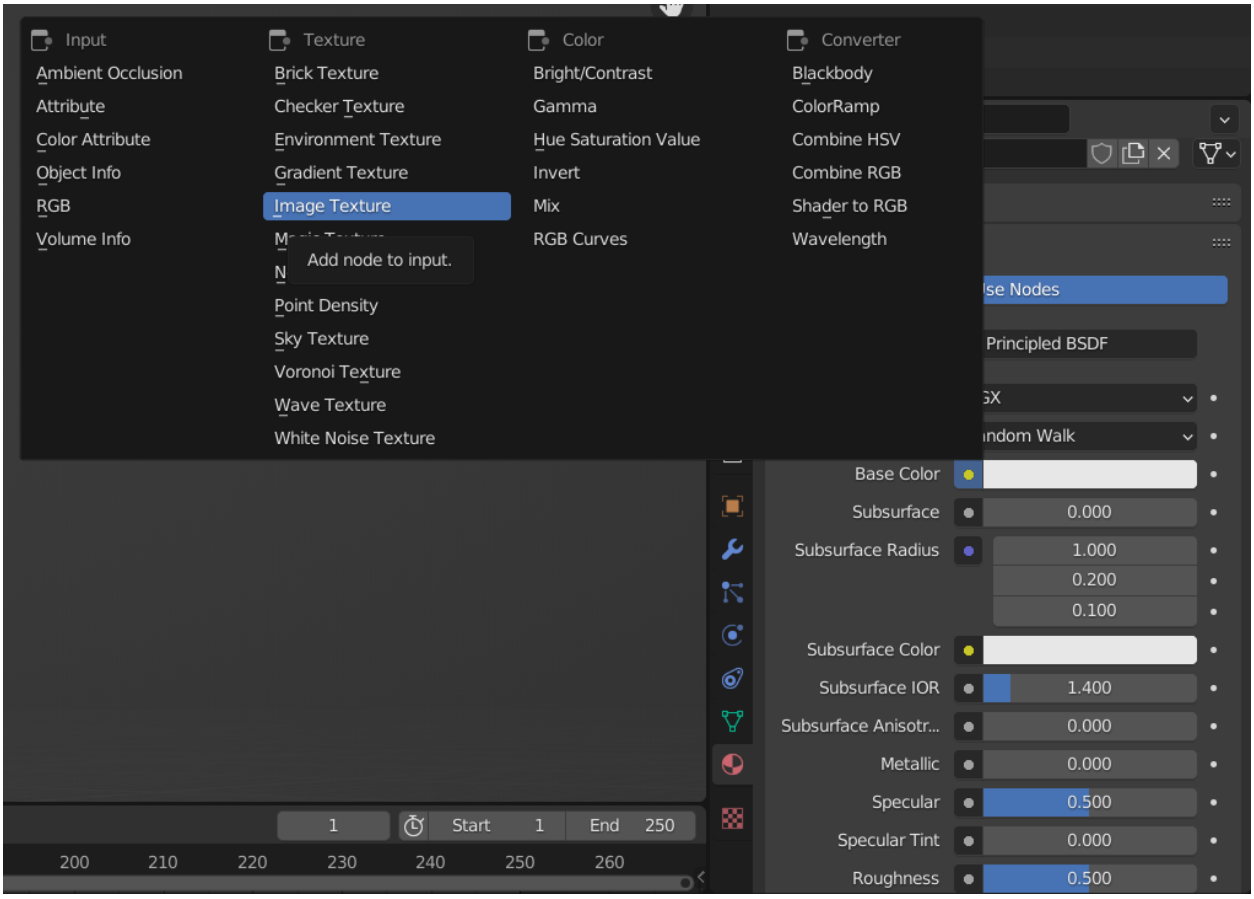


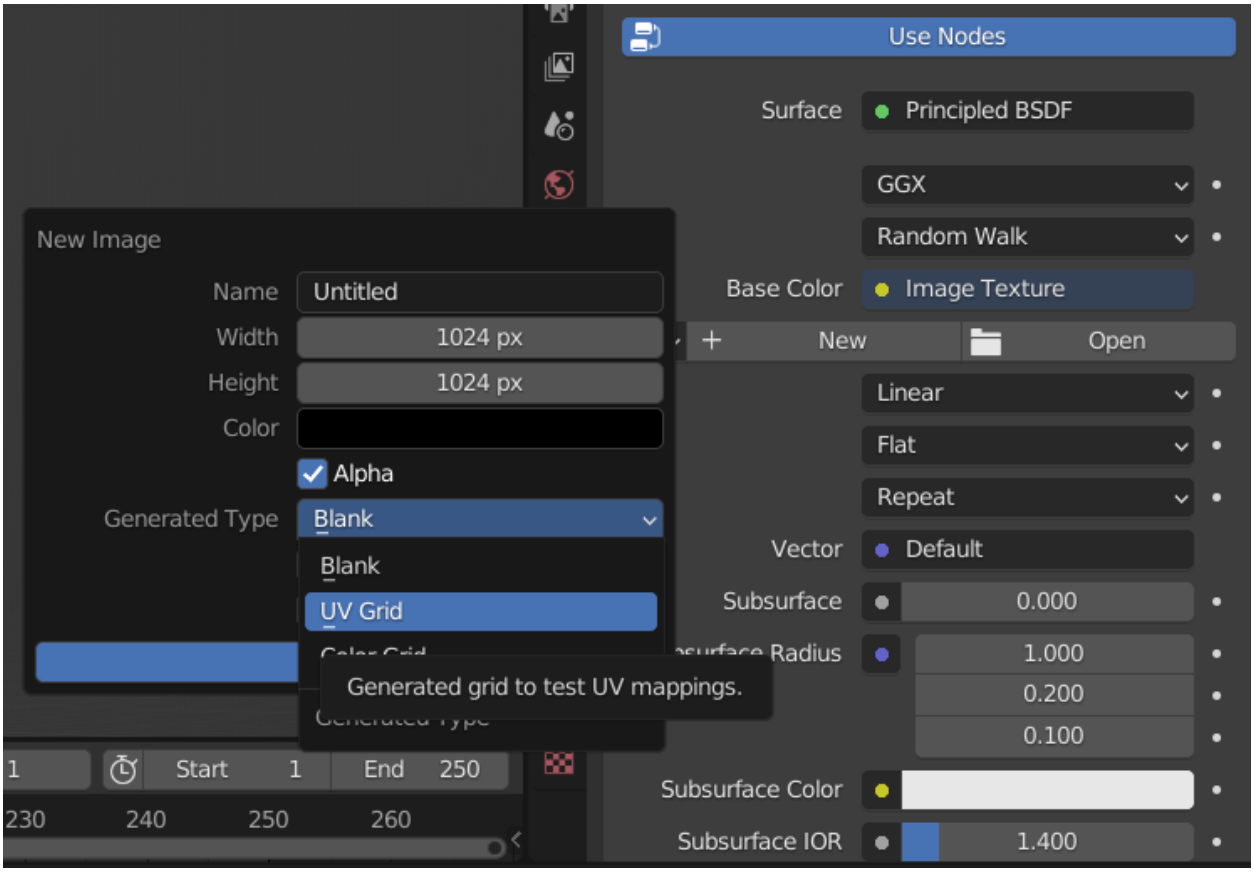

View
Select
Image
UV
New
Open
UVI
Transform
Mirror
Snap
Snap to Pixels
Constrain to Image Bounds
Merge M
Split Alt M
Live Unwrap
Unwrap U
Pin P
Unpin Alt P
Mark Seam
Clear Seam
Seams from Islands
Pack Islands
Average Islands Scale
Minimize Stretch
Stitch Alt V
Align Shift W
Show/Hide Faces
Reset
Export UV Layout
UVs to grid of squares
UVs to grid with respect to shape Alt E
UV face rip Alt V
UV face join Shift Alt V
Transform all islands so that they fill up the UV/UDIM space as much as possible.
Scene Co
Colle
Cylinc
Add Modi



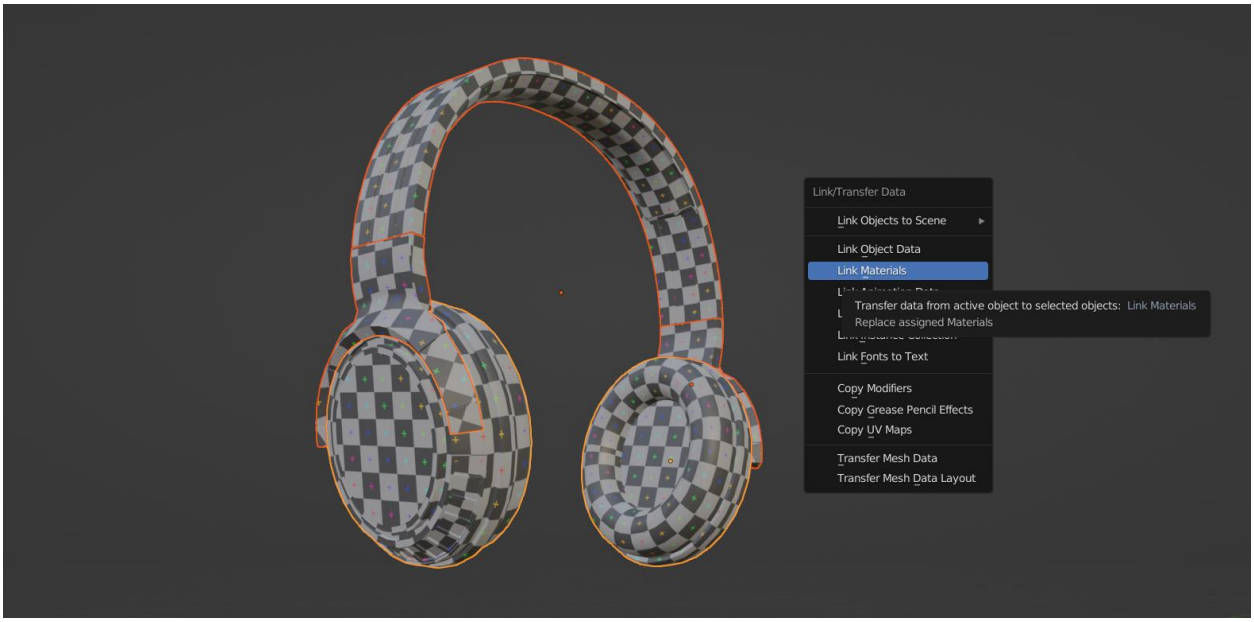



Camera
Camera.001
Plane
Plane
New
250
190
ts:13,344 | Faces:13,033 | Tris:26,662 | Objects:1/7 | VRAM: 1.4/12.0 GiB | 3.3.0
19°C Nublado
21:39

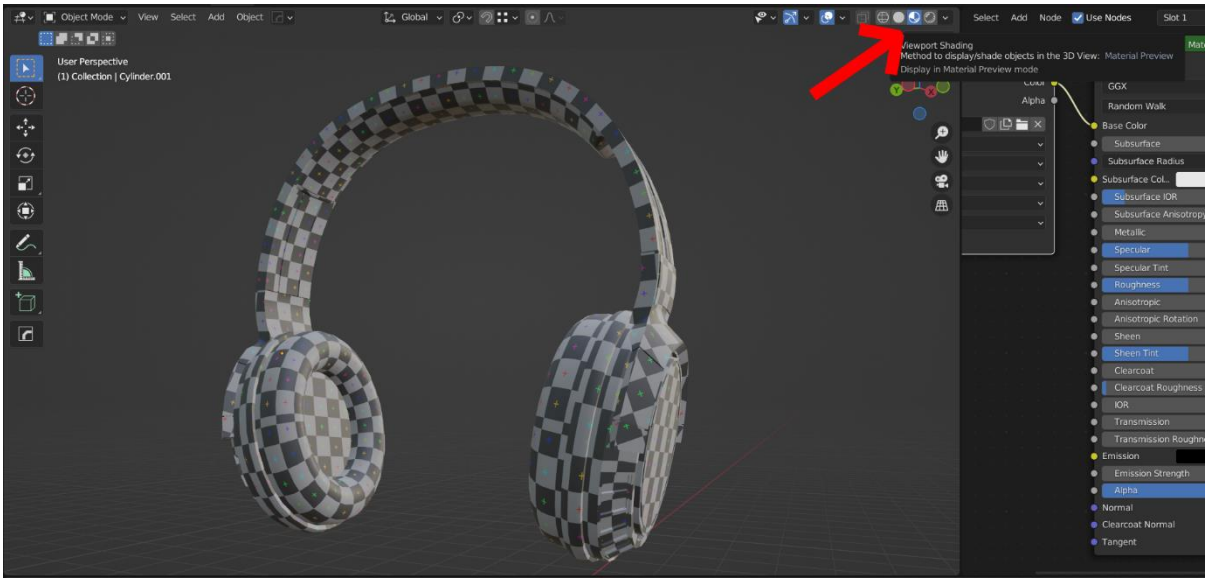

Input
Ambient Occlusion
Attribute
Color Attribute
Object Info
RGB
Volume Info
Texture
Brick Texture
Checker Texture
Environment Texture
Gradient Texture
Image Texture
Point Density
Sky Texture
Voronoi Texture
Wave Texture
White Noise Texture
Add node to input.
Color
Bright/Contrast
Gamma
Hue Saturation Value
Invert
Mix
RGB Curves
Converter
Blackbody
ColorRamp
Combine HSV
Combine RGB
Shader to RGB
Wavelength
se Nodes
Principled BSDF
ndom Walk
Base Color
Subsurface
0.000
Subsurface Radius
1.000
0.200
0.100
Subsurface Color
Subsurface IOR
1.400
Subsurface Anisotr...
0.000
Metallic
0.000
Specular
0.500
Specular Tint
0.000
Roughness
0.500
1
Start 1
End 250
200 210 220 230 240 250 260

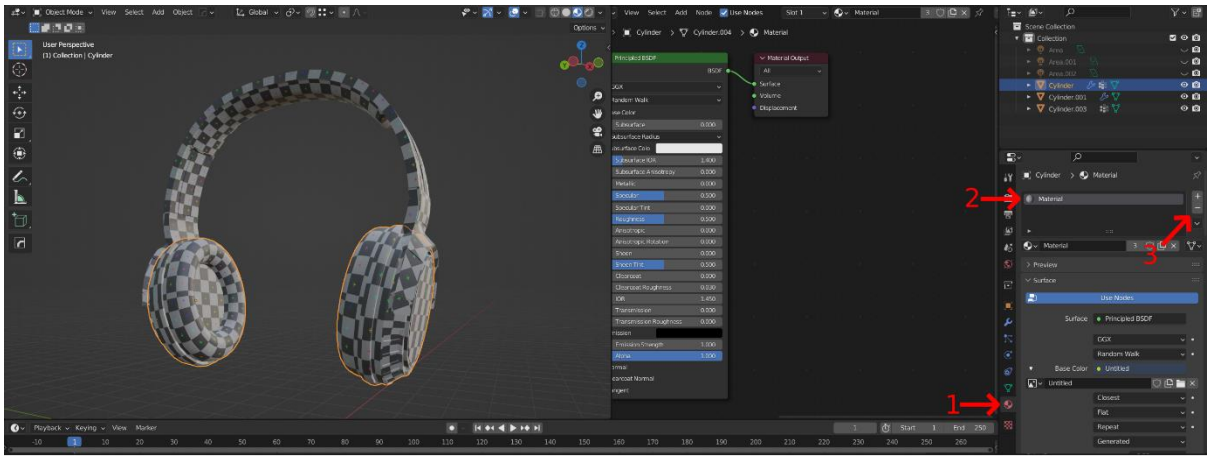

Use Nodes
Surface
Principled BSDF
GGX
Random Walk
Base Color
Image Texture
New
Open
Linear
Flat
Repeat
Vector
Default
Subsurface
0.000
1.000
0.200
0.100
Subsurface Color
Subsurface IOR
1.400
New Image
Name
Untitled
Width
1024 px
Height
1024 px
Color
Alpha
Generated Type
Blank
Blank
UV Grid
Generated grid to test UV mappings.
1
Start
1
End
250
230
240
250
260

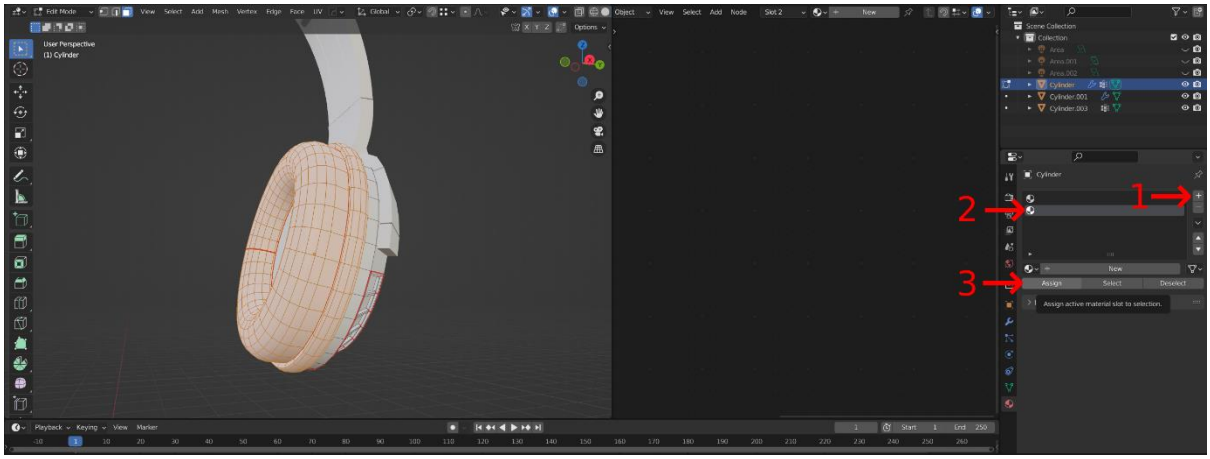
Object Mode
View
Select
Add
Object
Global
Options
User Perspective
(1) Collection | Cylinder
Objects 1 / 3
Vertices 4,044
Edges 8,010
Faces 3,976
Triangles 8,068

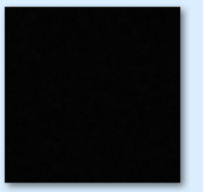

Link/Transfer Data
Link Objects to Scene
Link Object Data
Link Materials
Transfer data from active object to selected objects: Link Materials
Replace assigned Materials
Link Fonts to Text
Copy Modifiers
Copy Grease Pencil Effects
Copy UV Maps
Transfer Mesh Data
Transfer Mesh Data Layout

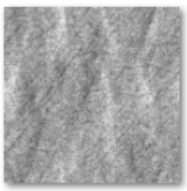
Chapter 4: Texturing Your 3D Asset Using PBR and Procedural Textures







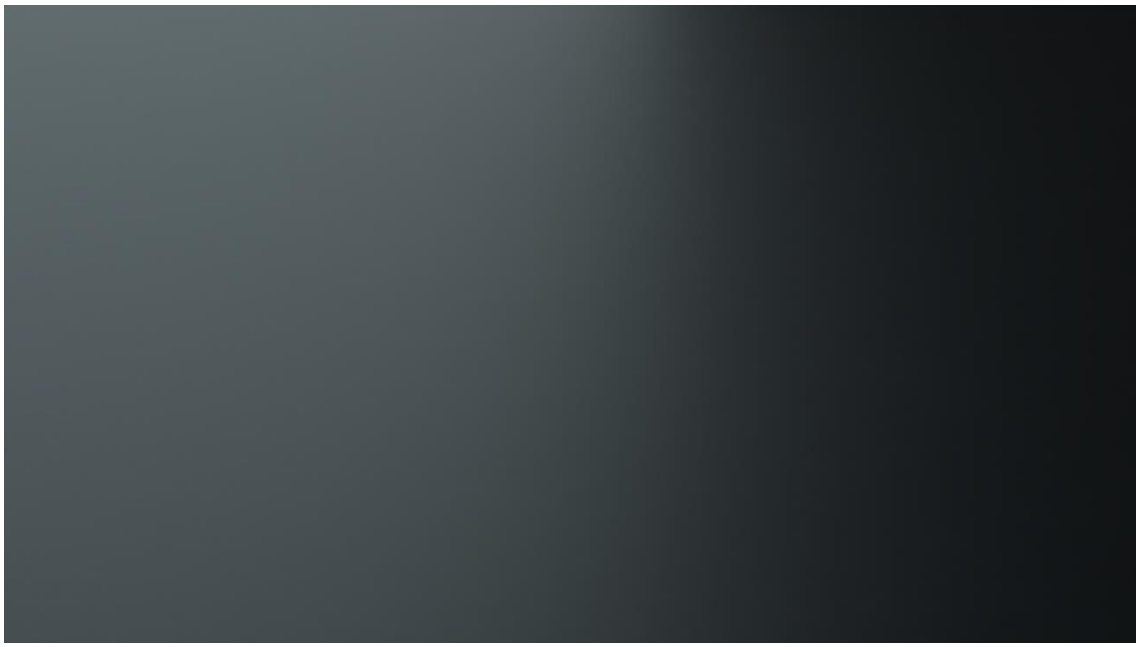

Leather027_2K_Color.png

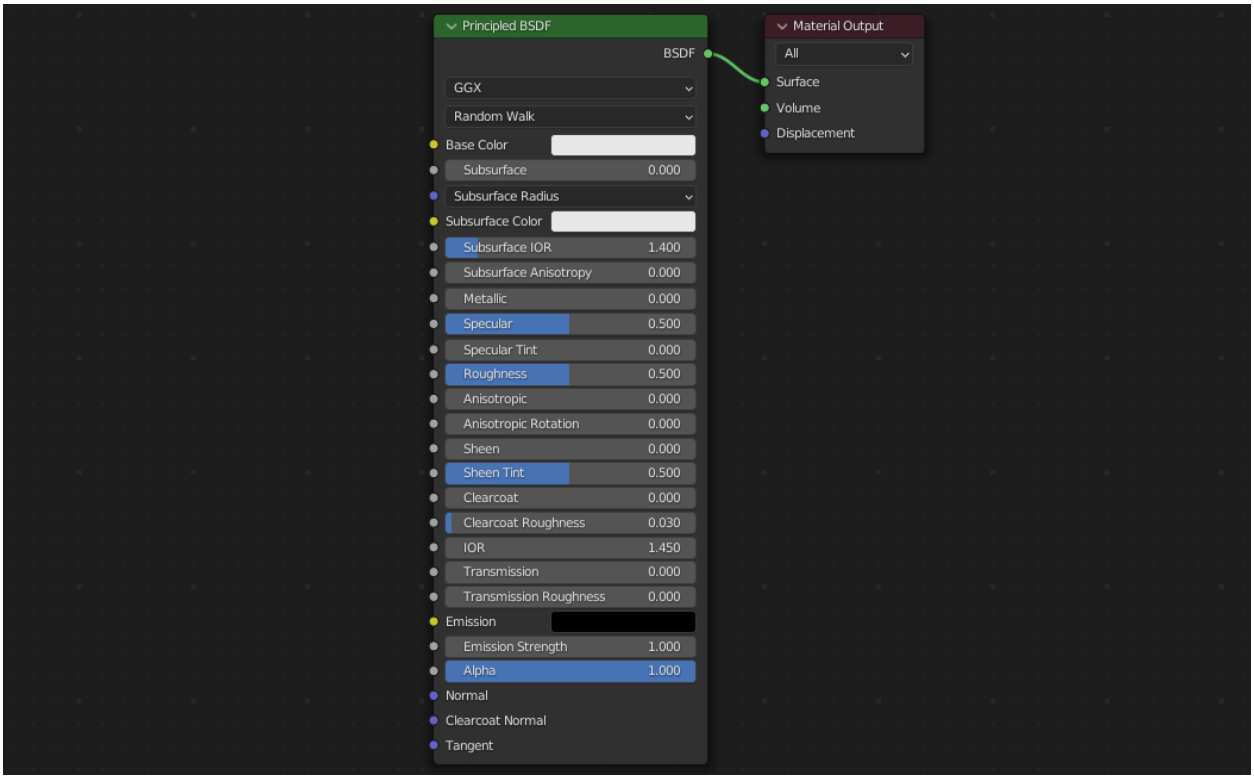

Leather027_2K_Displacement.png

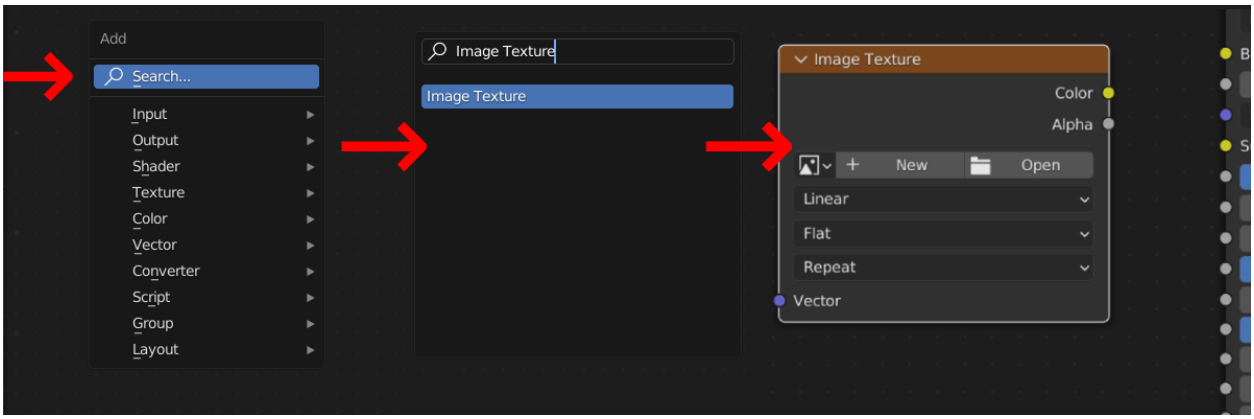
Leather027_2K_NormalDX.png

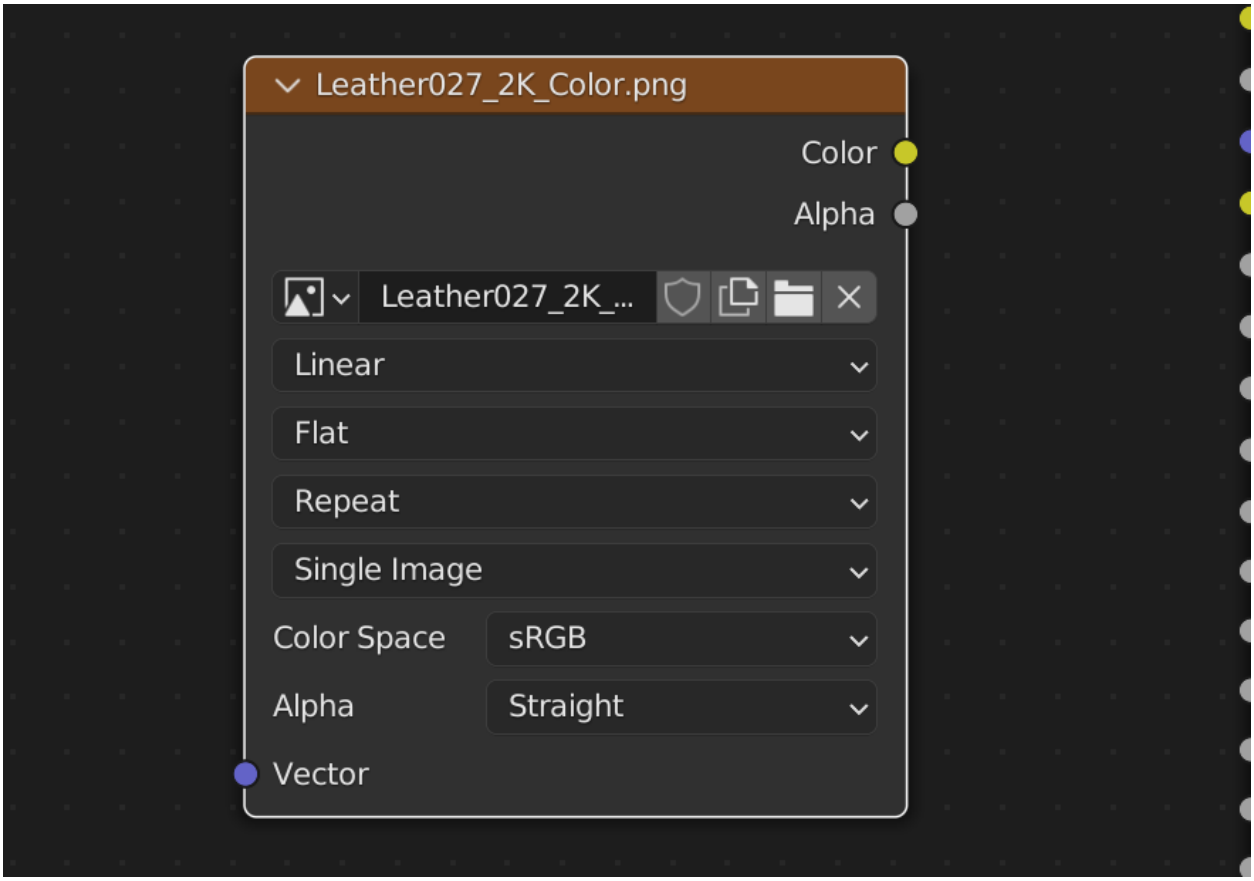
Leather027_2K_NormalGL.png

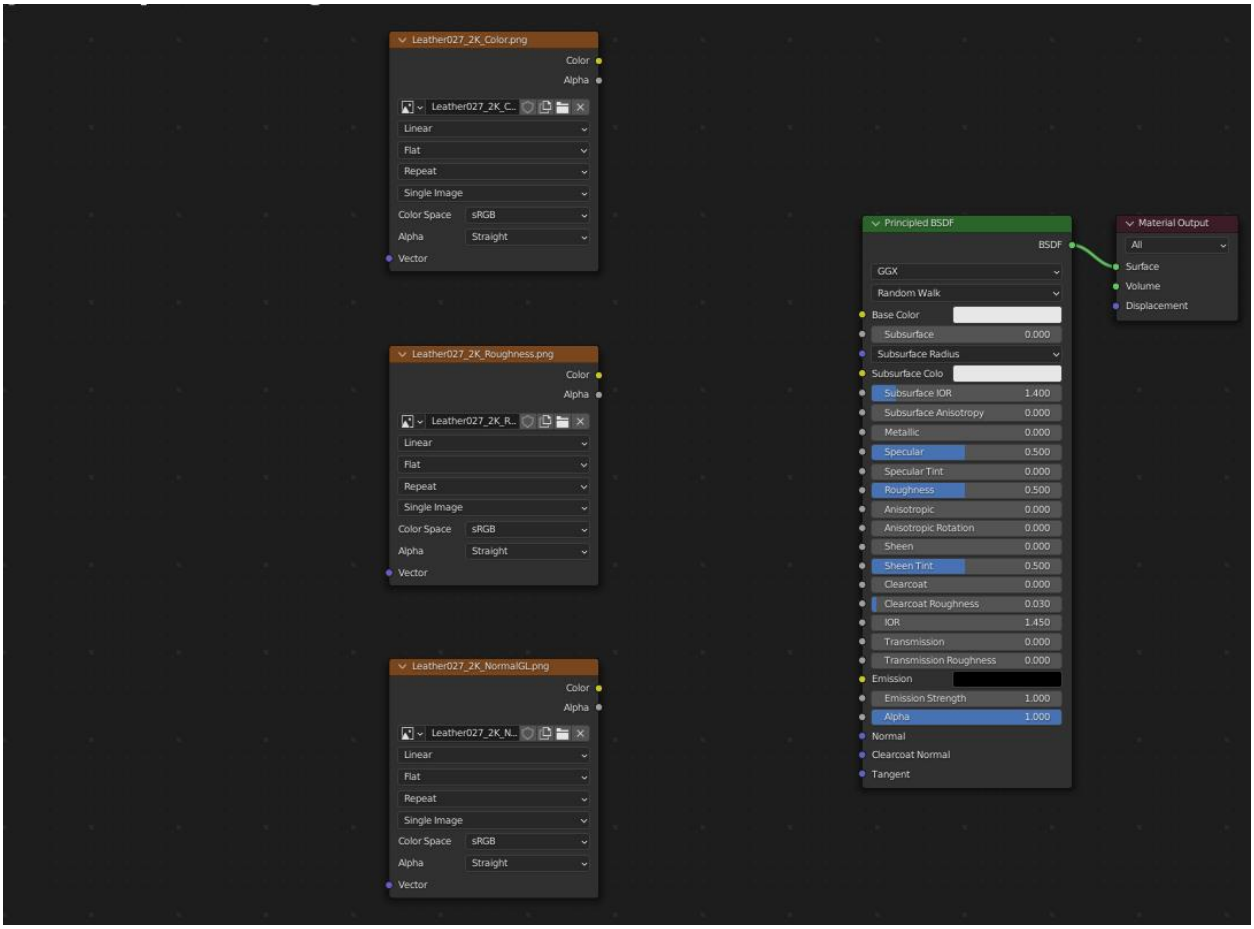
Leather027_2K_Roughness.png

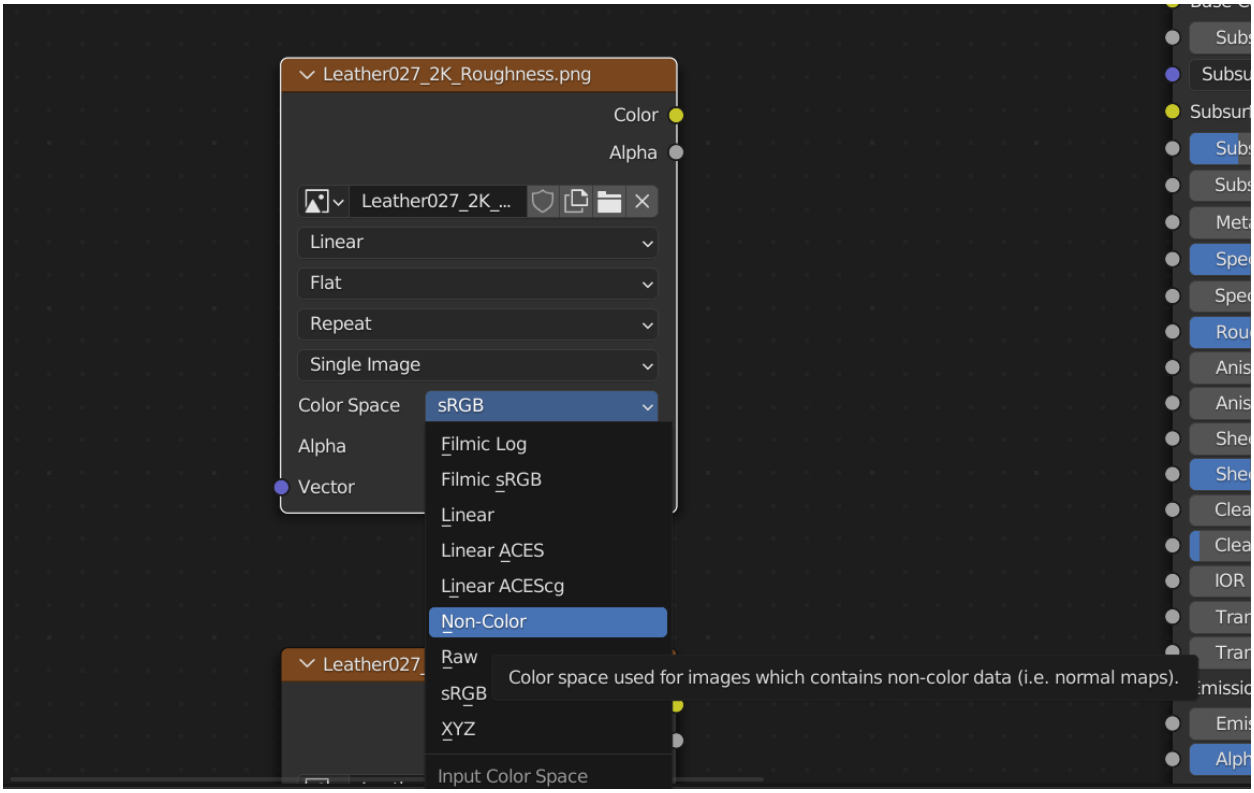


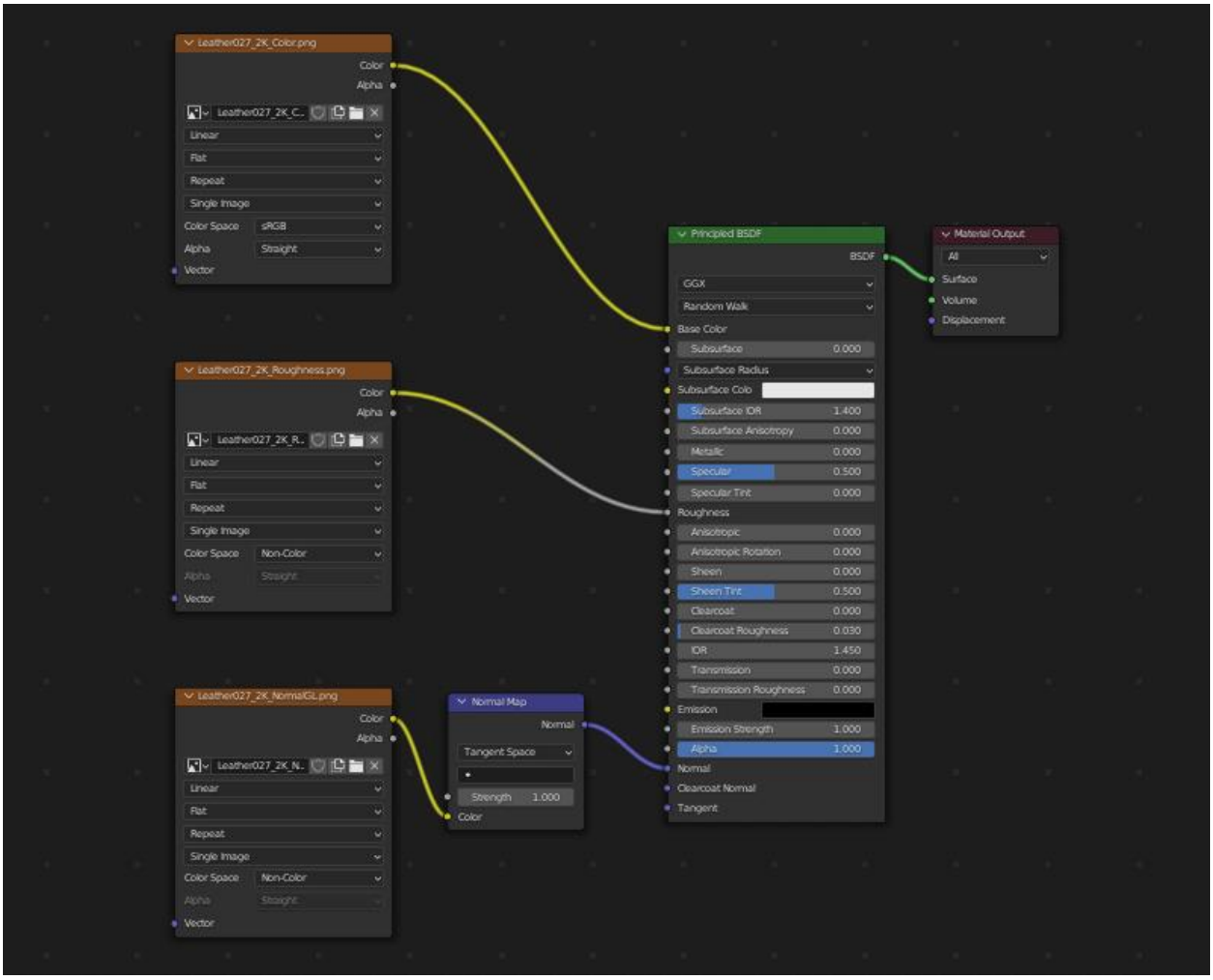

Principled BSDF
BSDF
GGX
Random Walk
Base Color
Subsurface 0.000
Subsurface Radius
Subsurface Color
Subsurface IOR 1.400
Subsurface Anisotropy 0.000
Metallic 0.000
Specular 0.500
Specular Tint 0.000
Roughness 0.500
Anisotropic 0.000
Anisotropic Rotation 0.000
Sheen 0.000
Sheen Tint 0.500
Clearcoat 0.000
Clearcoat Roughness 0.030
IOR 1.450
Transmission 0.000
Transmission Roughness 0.000
Emission
Emission Strength 1.000
Alpha 1.000
Normal
Clearcoat Normal
Tangent
Material Output
All
Surface
Volume
Displacement

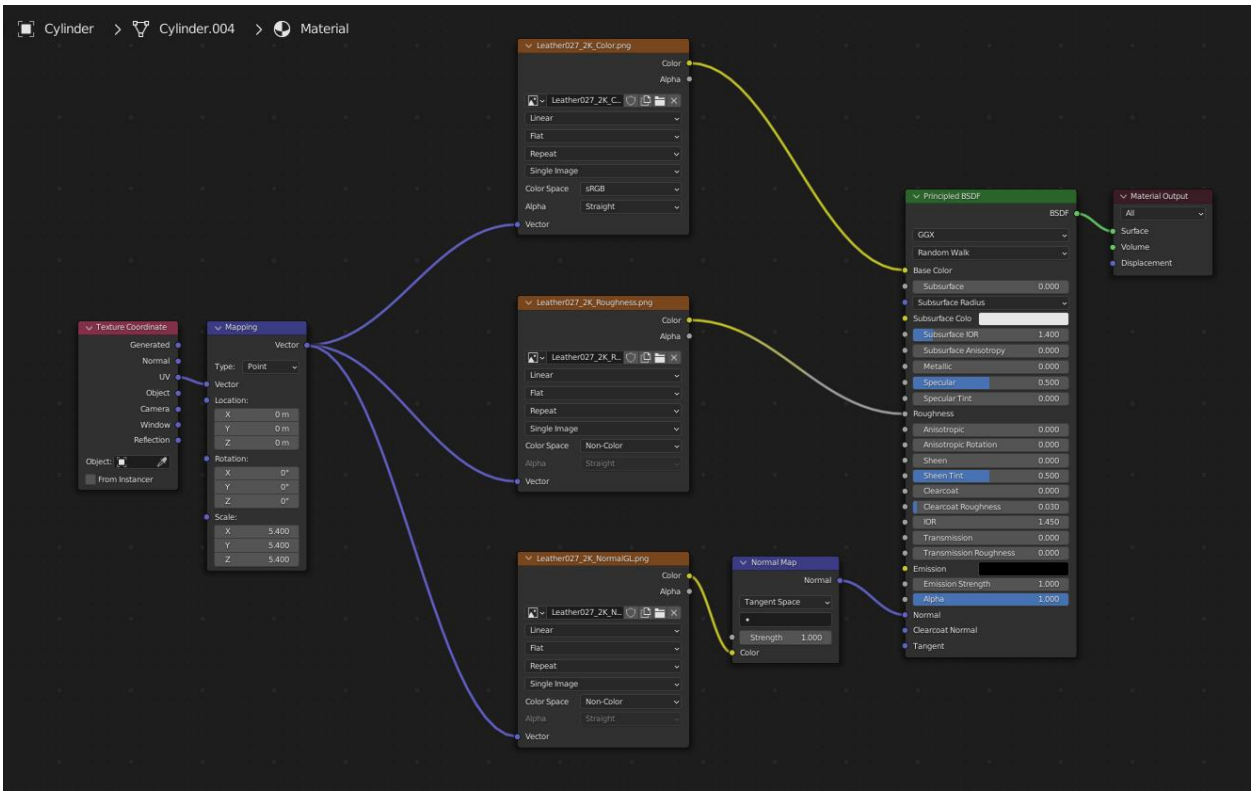

Add
Search...
Input
Output
Shader
Texture
Color
Vector
Converter
Script
Group
Layout
Image Texture
Image Texture
Image Texture
Color
Alpha
New
Open
Linear
Flat
Repeat
Vector

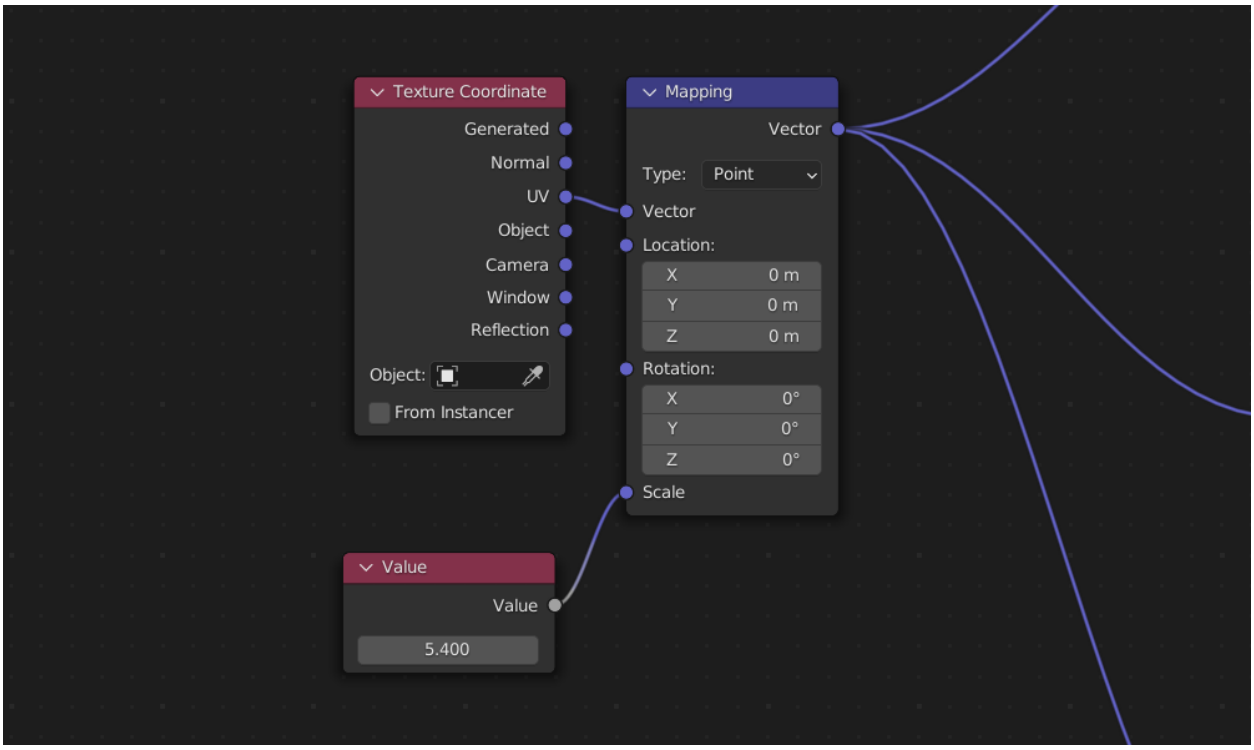

Leather027_2K_Color.png
Color
Alpha
Leather027_2K_...
Linear
Flat
Repeat
Single Image
Color Space
sRGB
Alpha
Straight
Vector

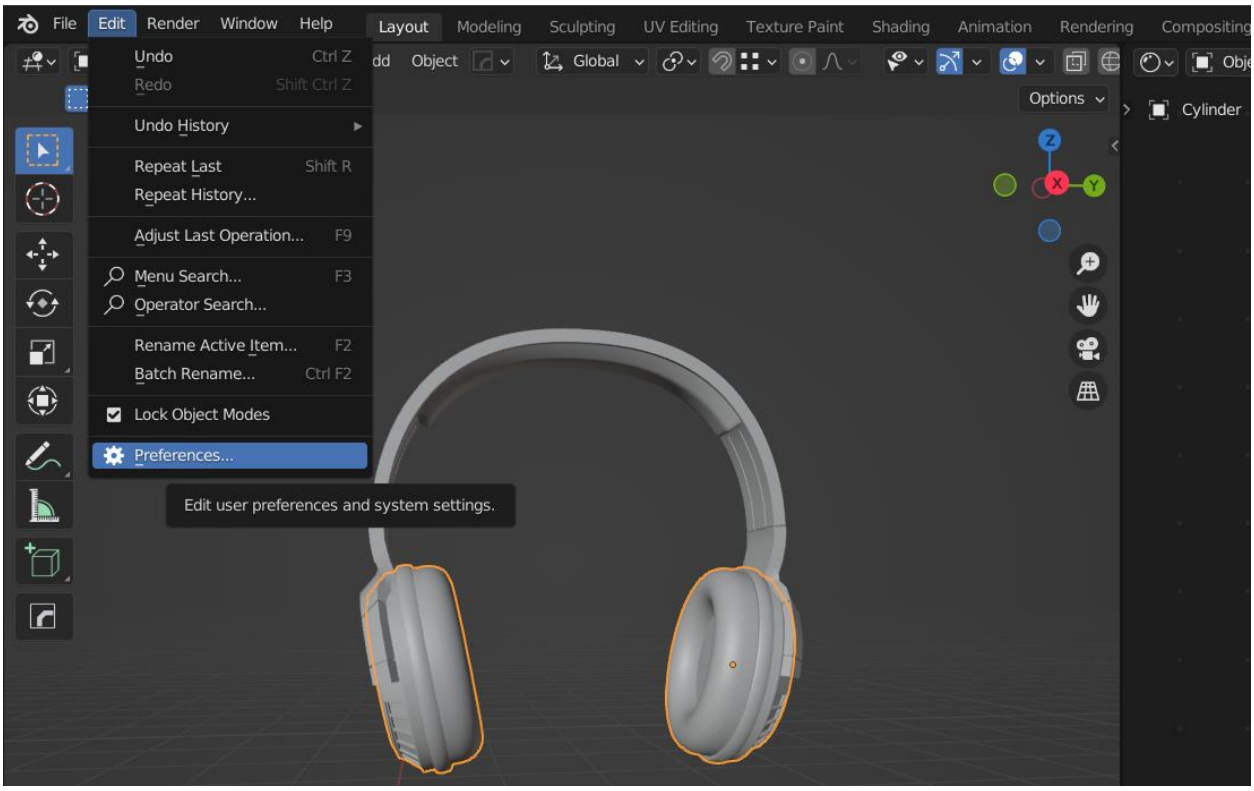

Leather027_2K_Color.png
Color
Alpha
Leather027_2K_C...
Linear
Flat
Repeat
Single Image
Color Space
sRGB
Alpha
Straight
Vector
Leather027_2K_Roughness.png
Color
Alpha
Leather027_2K_R...
Linear
Flat
Repeat
Single Image
Color Space
sRGB
Alpha
Straight
Vector
Leather027_2K_NormalGL.png
Color
Alpha
Leather027_2K_N...
Linear
Flat
Repeat
Single Image
Color Space
sRGB
Alpha
Straight
Vector
Principled BSDF
BSDF
GGX
Random Walk
Base Color
Subsurface 0.000
Subsurface Radius
Subsurface Colo
Subsurface IOR 1.400
Subsurface Anisotropy 0.000
Metallic 0.000
Specular 0.500
Specular Tint 0.000
Roughness 0.500
Anisotropic 0.000
Anisotropic Rotation 0.000
Sheen 0.000
Sheen Tint 0.500
Clearcoat 0.000
Clearcoat Roughness 0.030
IOR 1.450
Transmission 0.000
Transmission Roughness 0.000
Emission
Emission Strength 1.000
Alpha 1.000
Normal
Clearcoat Normal
Tangent
Material Output
All
Surface
Volume
Displacement

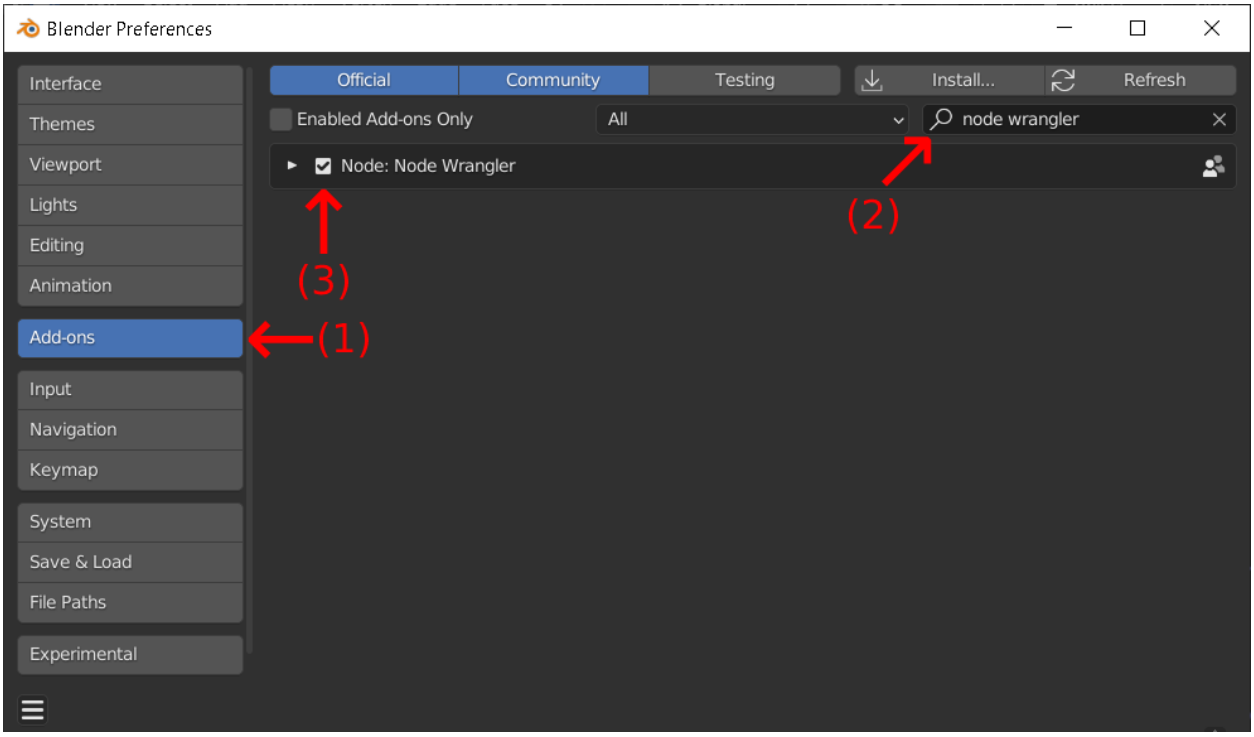

Leather027_2K_Roughness.png
Color
Alpha
Leather027_2K_...
Linear
Flat
Repeat
Single Image
Color Space
sRGB
Alpha
Vector
Filmic Log
Filmic sRGB
Linear
Linear ACES
Linear ACEScg
Non-Color
Raw
sRGB
XYZ
Input Color Space
Color space used for images which contains non-color data (i.e. normal maps).

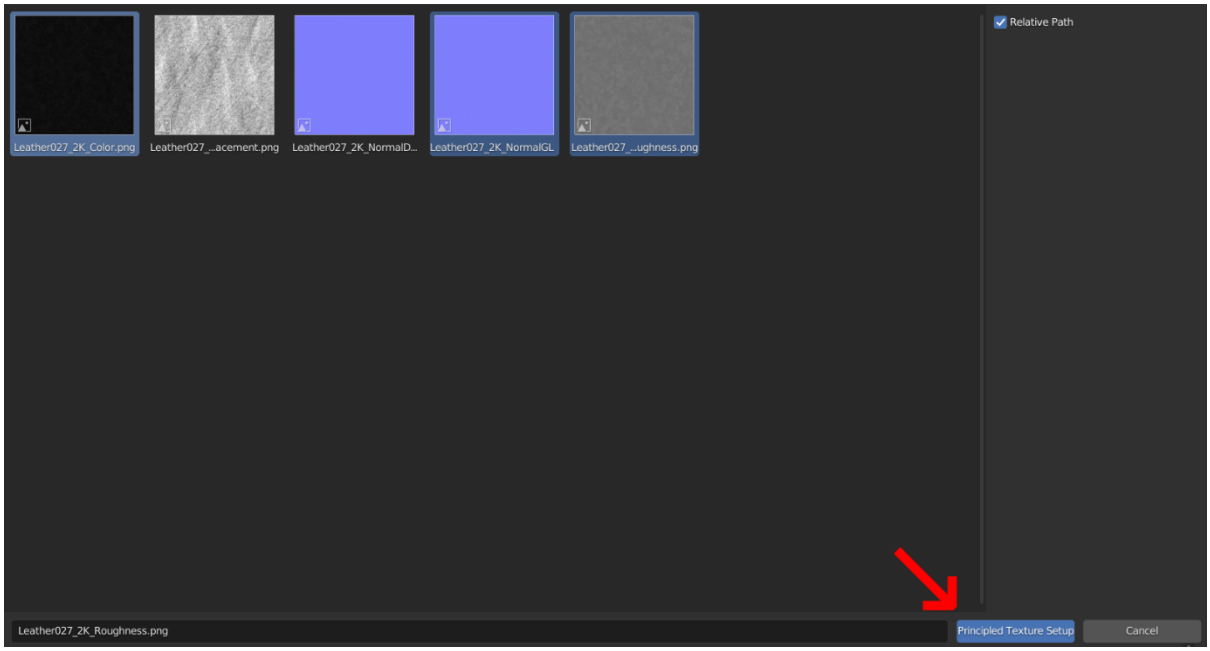

Leather027_2K_Color.png
Color
Alpha
Leather027_2K_C..
Linear
Flat
Repeat
Single Image
Color Space
sRGB
Alpha
Straight
Vector
Leather027_2K_Roughness.png
Color
Alpha
Leather027_2K_R..
Linear
Flat
Repeat
Single Image
Color Space
Non-Color
Alpha
Straight
Vector
Leather027_2K_NormalGL.png
Color
Alpha
Leather027_2K_N..
Linear
Flat
Repeat
Single Image
Color Space
Non-Color
Alpha
Straight
Vector
Normal Map
Normal
Tangent Space
Strength
1.000
Color
Principled BSDF
BSDF
GGX
Random Walk
Base Color
Subsurface
0.000
Subsurface Radius
Subsurface Colo
Subsurface IOR
1.400
Subsurface Anisotropy
0.000
Metallic
0.000
Specular
0.500
Specular Tint
0.000
Roughness
Anisotropic
0.000
Anisotropic Rotation
0.000
Sheen
0.000
Sheen Tint
0.500
Clearcoat
0.000
Clearcoat Roughness
0.030
IOR
1.450
Transmission
0.000
Transmission Roughness
0.000
Emission
Emission Strength
1.000
Alpha
1.000
Normal
Clearcoat Normal
Tangent
Material Output
All
Surface
Volume
Displacement

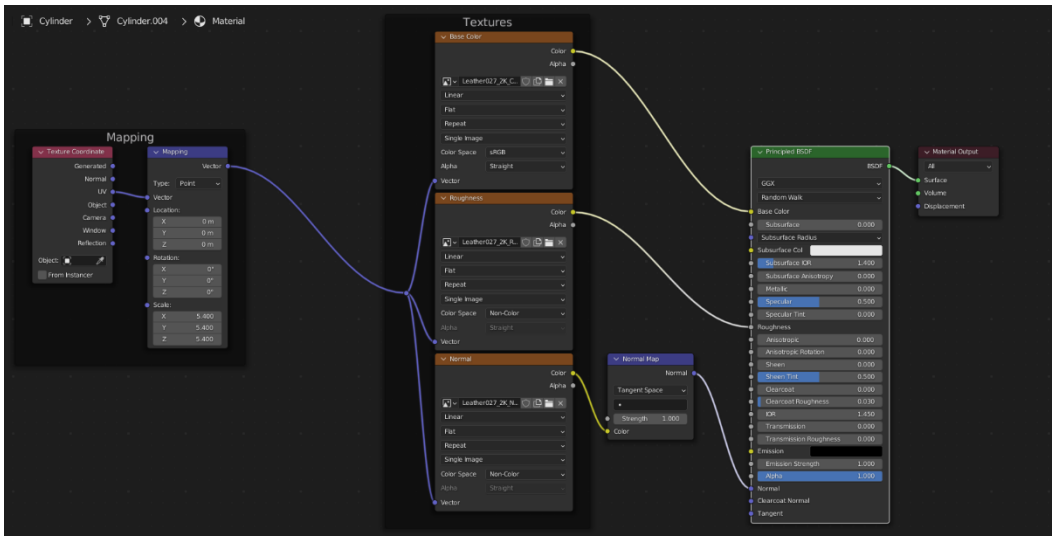

Cylinder
Cylinder.004
Material
Leather027_2K_Color.png
Color
Alpha
Linear
Flat
Repeat
Single Image
Color Space
sRGB
Alpha
Straight
Vector
Texture Coordinate
Generated
Normal
UV
Object
Camera
Window
Reflection
Object:
From Instancer
Mapping
Vector
Type:
Point
Location:
X
0 m
Y
0 m
Z
0 m
Rotation:
X
0°
Y
0°
Z
0°
Scale:
X
5.400
Y
5.400
Z
5.400
Leather027_2K_Roughness.png
Non-Color
Leather027_2K_NormalGL.png
Normal Map
Tangent Space
Strength
1.000
Color
Principled BSDF
BSDF
GGX
Random Walk
Base Color
Subsurface
0.000
Subsurface Radius
Subsurface Colo
Subsurface IOR
1.400
Subsurface Anisotropy
0.000
Metallic
0.000
Specular
0.500
Specular Tint
0.000
Roughness
Anisotropic
0.000
Anisotropic Rotation
0.000
Sheen
0.000
Sheen Tint
0.500
Clearcoat
0.000
Clearcoat Roughness
0.030
IOR
1.450
Transmission
0.000
Transmission Roughness
0.000
Emission
Emission Strength
1.000
Alpha
1.000
Normal
Clearcoat Normal
Tangent
Material Output
All
Surface
Volume
Displacement

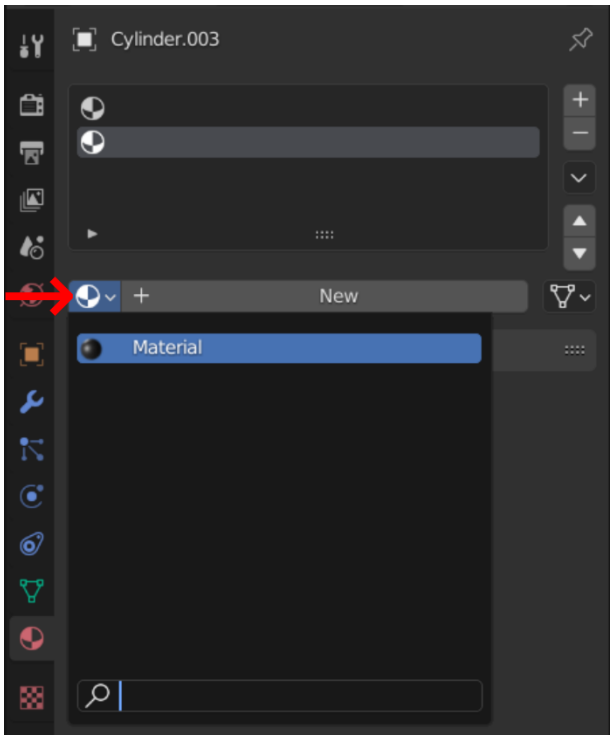

Texture Coordinate
Generated
Normal
UV
Object
Camera
Window
Reflection
Object:
From Instancer
Mapping
Vector
Type:
Point
Vector
Location:
X
0 m
Y
0 m
Z
0 m
Rotation:
X
0°
Y
0°
Z
0°
Scale
Value
Value
5.400

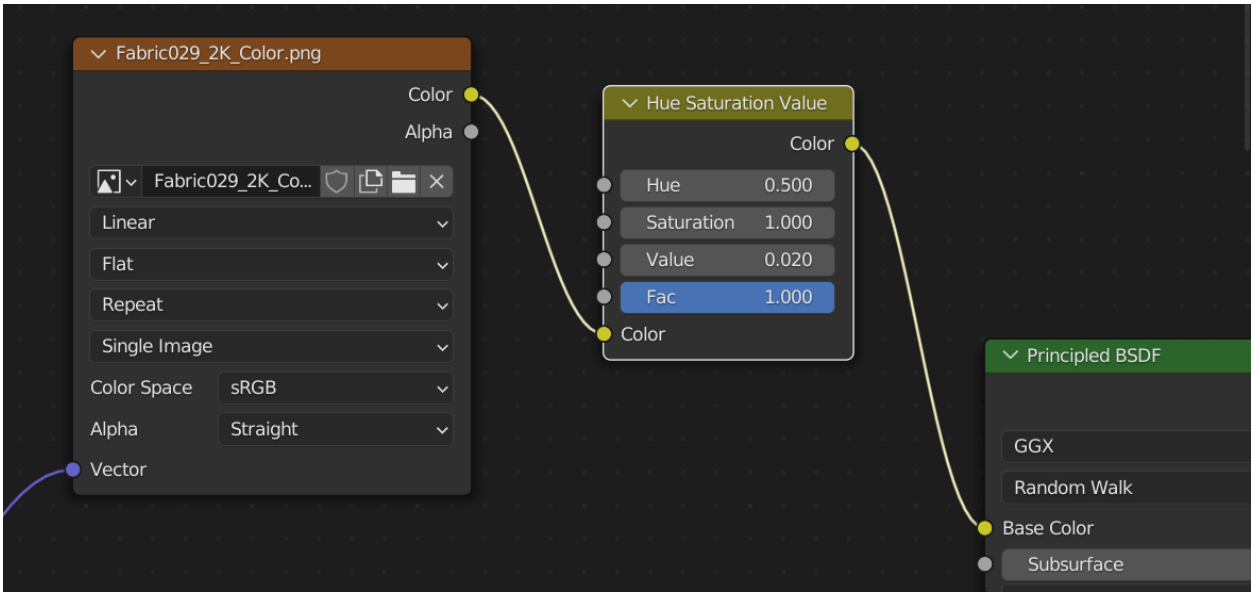

File
Edit
Render
Window
Help
Layout
Modeling
Sculpting
UV Editing
Texture Paint
Shading
Animation
Rendering
Compositing
Undo Ctrl Z
Redo Shift Ctrl Z
Undo History
Repeat Last Shift R
Repeat History...
Adjust Last Operation... F9
Menu Search... F3
Operator Search...
Rename Active Item... F2
Batch Rename... Ctrl F2
Lock Object Modes
Preferences...
Edit user preferences and system settings.
Object
Global
Options
Cylinder

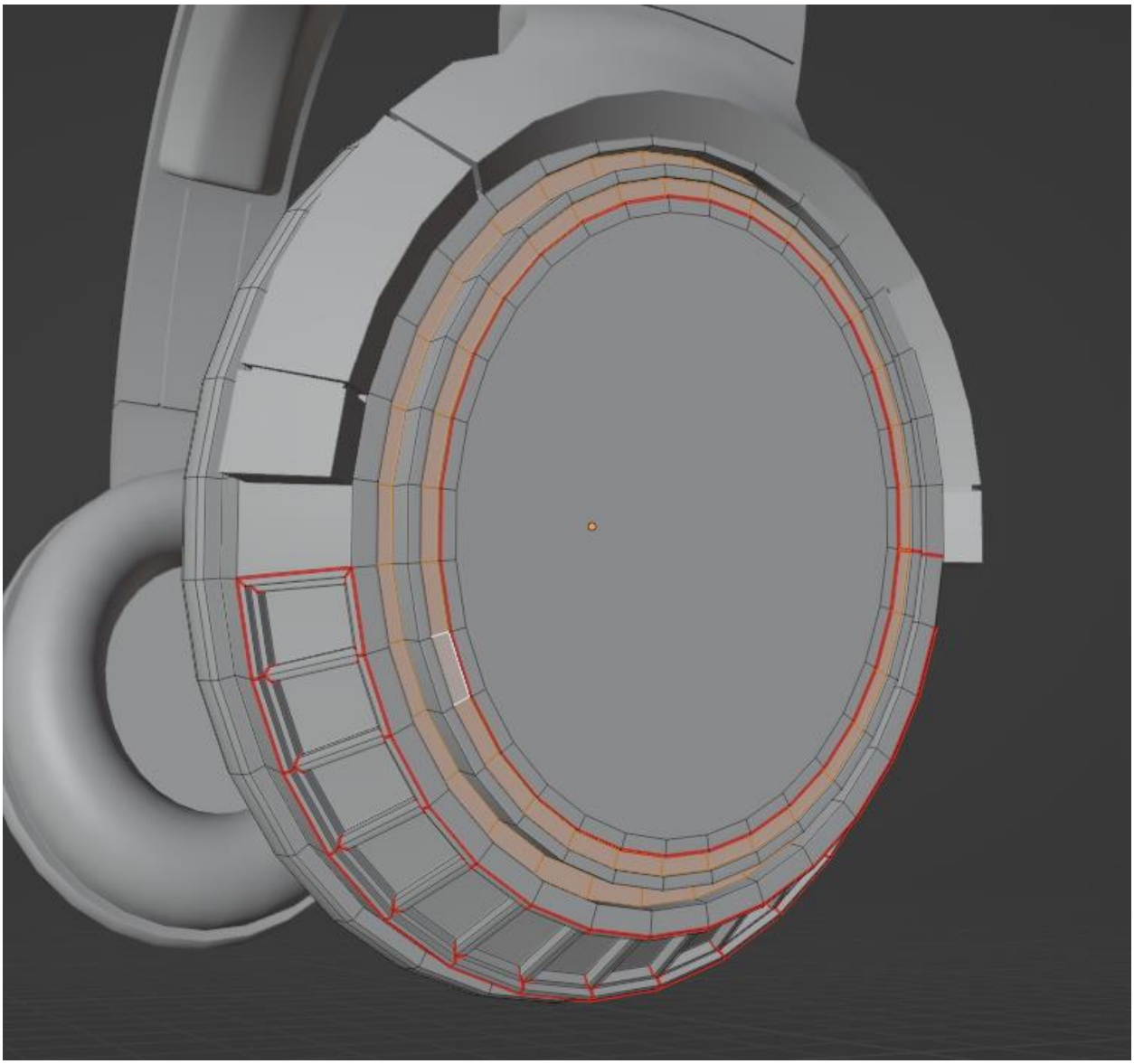

Blender Preferences
Interface
Themes
Viewport
Lights
Editing
Animation
Add-ons
Input
Navigation
Keymap
System
Save & Load
File Paths
Experimental
Official
Community
Testing
Install...
Refresh
Enabled Add-ons Only
All
node wrangler
Node: Node Wrangler
(1)
(2)
(3)

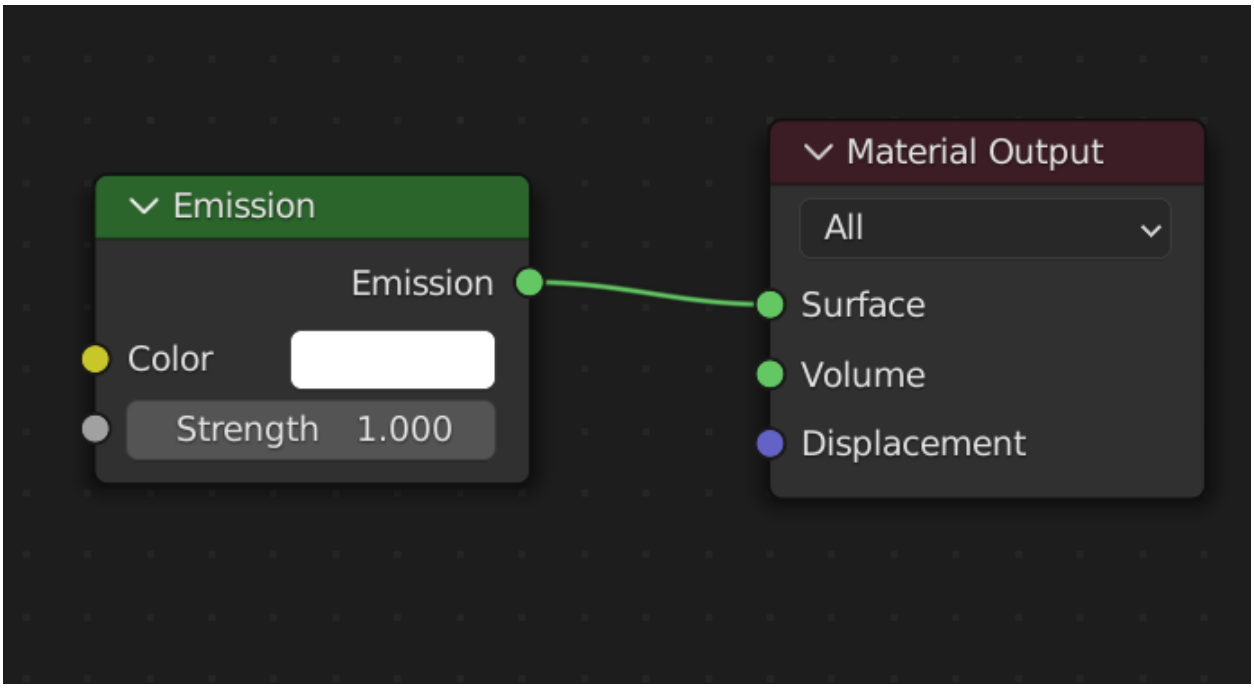

Leather027_2K_Color.png
Leather027_...acement.png
Leather027_2K_NormalD...
Leather027_2K_NormalGL
Leather027_...ughness.png
Relative Path
Leather027_2K_Roughness.png
Principled Texture Setup
Cancel

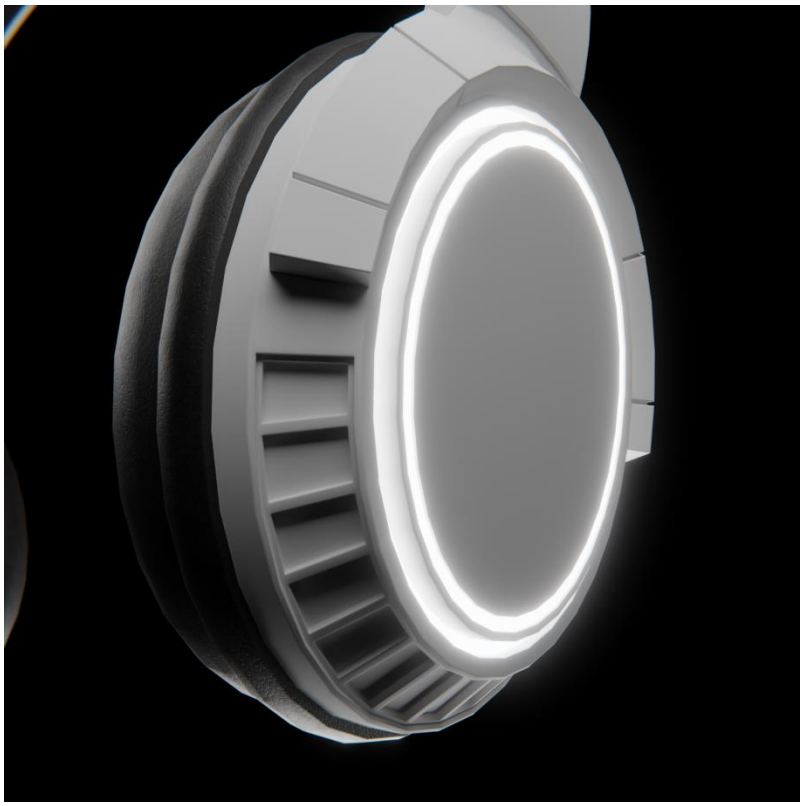

Cylinder
Cylinder.004
Material
Mapping
Textures
Base Color
Roughness
Normal
Normal Map
Principled BSDF
Material Output

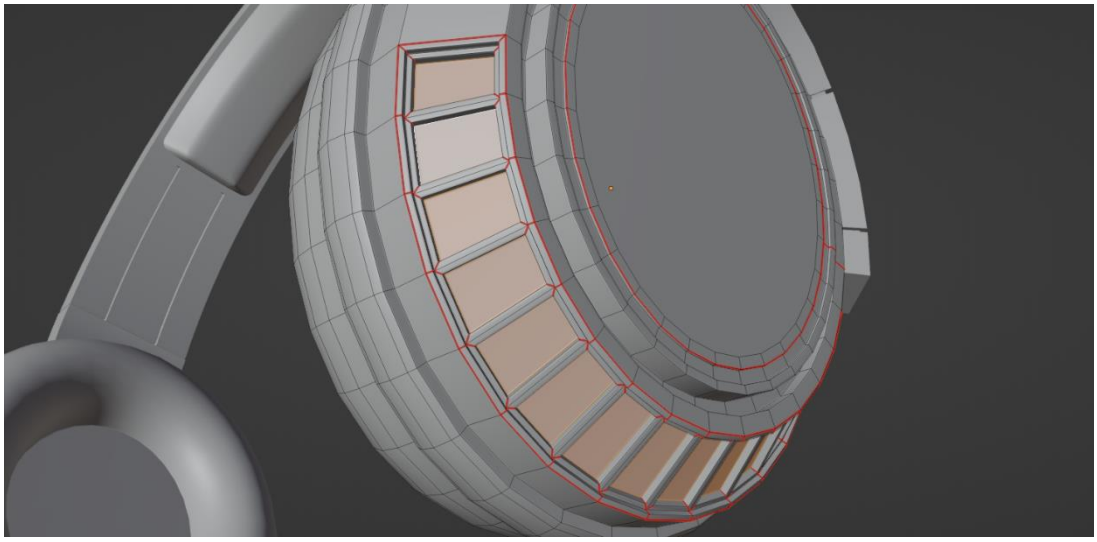

Cylinder.003
New
Material

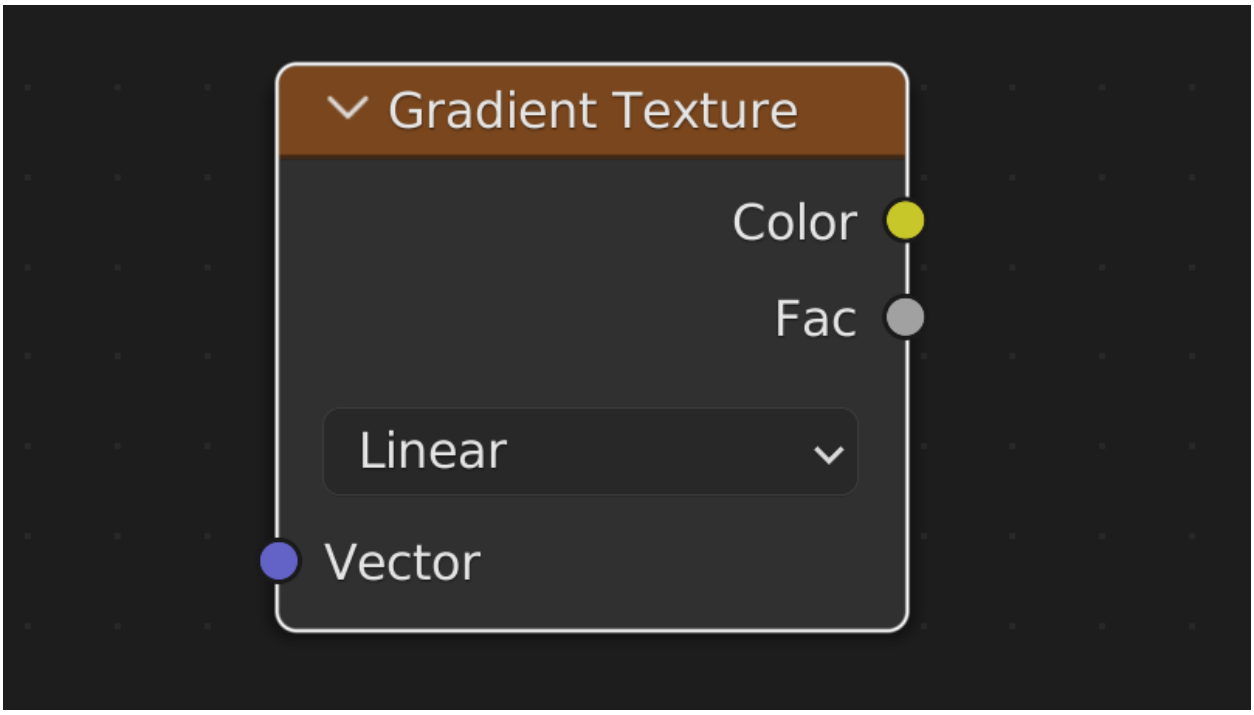

Fabric029_2K_Color.png
Color
Alpha
Fabric029_2K_Co...
Linear
Flat
Repeat
Single Image
Color Space
sRGB
Alpha
Straight
Vector
Hue Saturation Value
Color
Hue
0.500
Saturation
1.000
Value
0.020
Fac
1.000
Color
Principled BSDF
GGX
Random Walk
Base Color
Subsurface

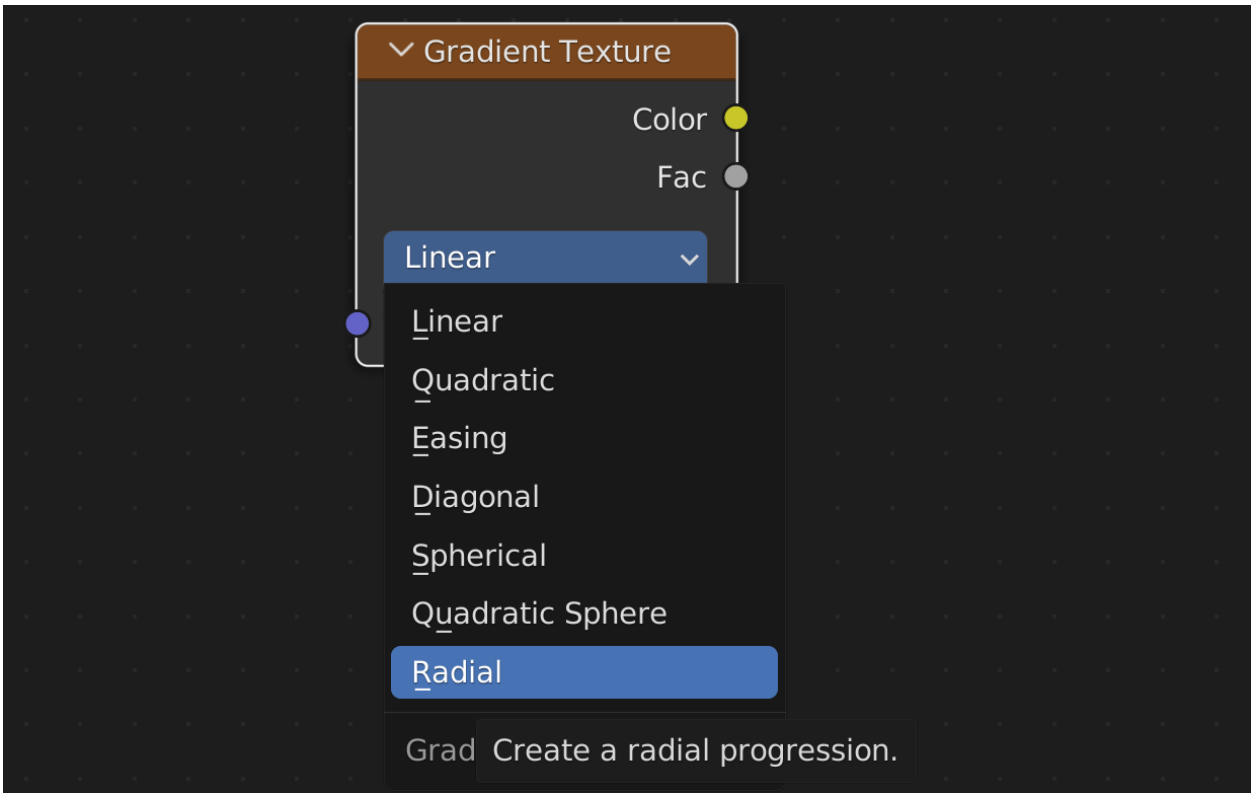


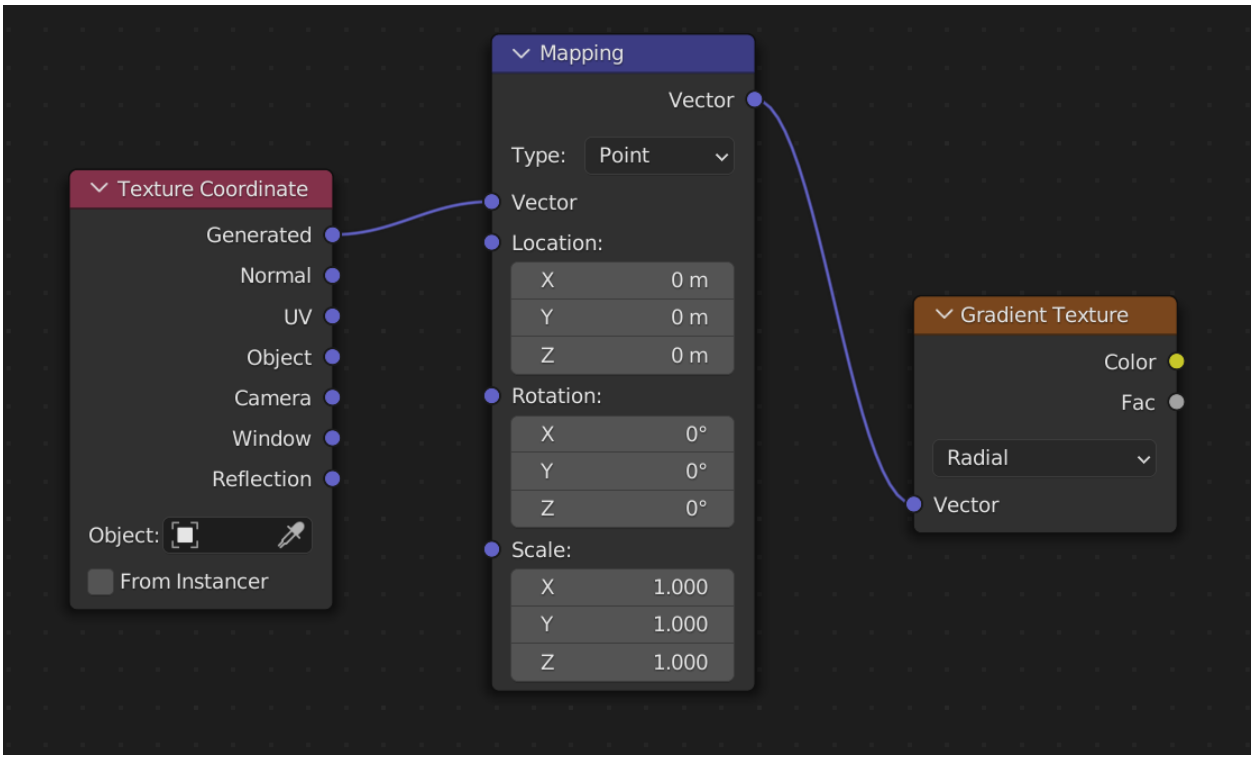

Material Output
All
Surface
Volume
Displacement
Emission
Emission
Color
Strength 1.000

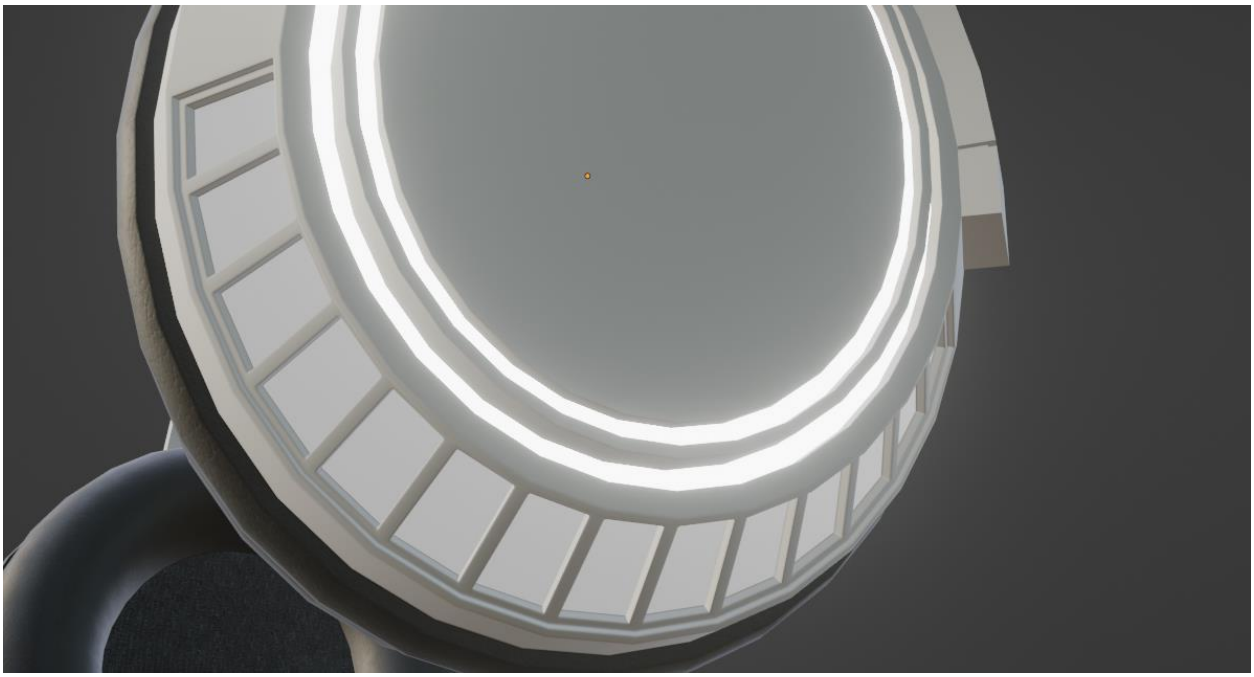


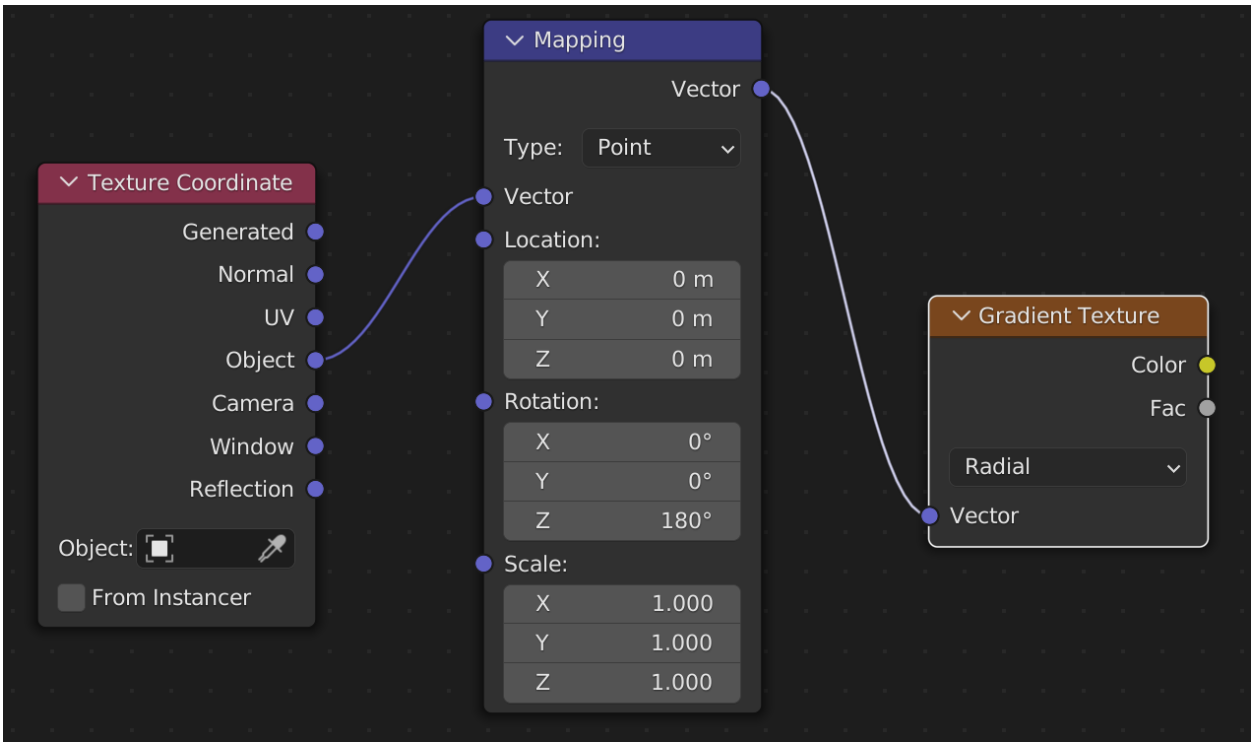


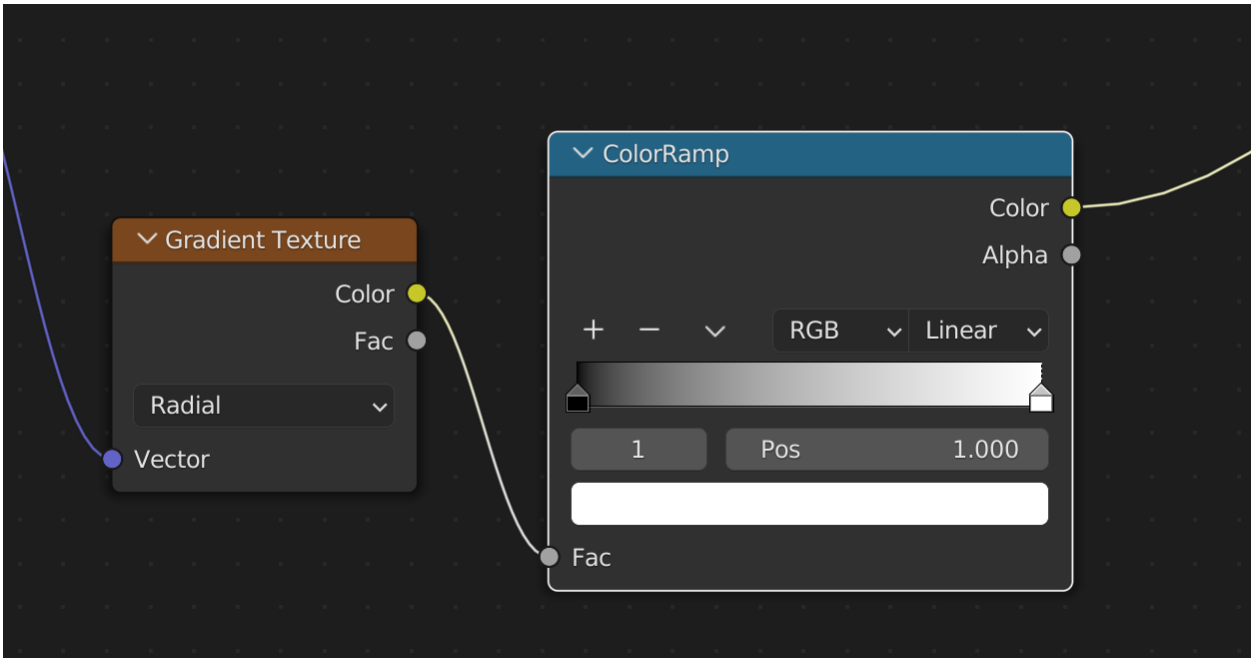

Gradient Texture
Color
Fac
Linear
Vector

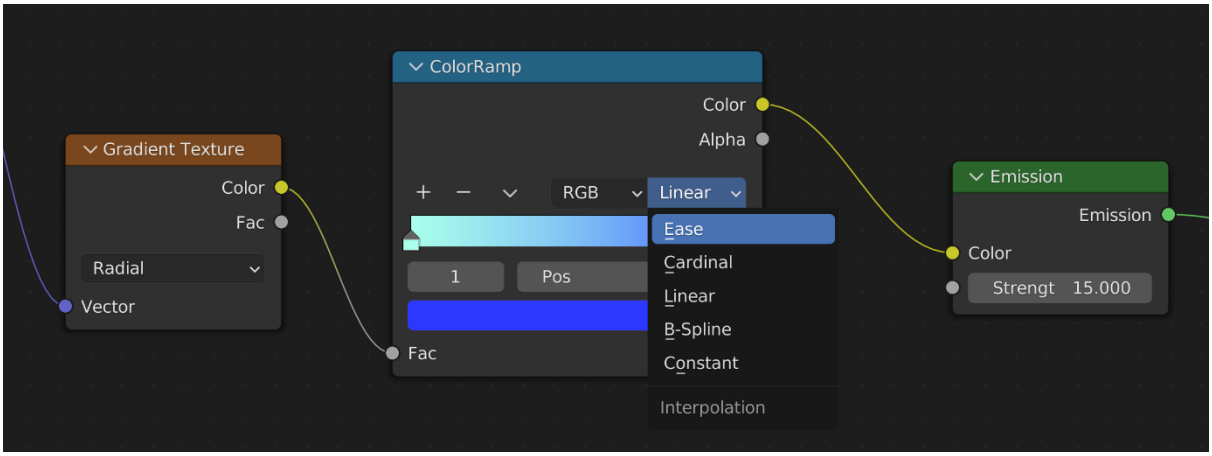

Gradient Texture
Color
Fac
Linear
Linear
Quadratic
Easing
Diagonal
Spherical
Quadratic Sphere
Radial
Grad
Create a radial progression.

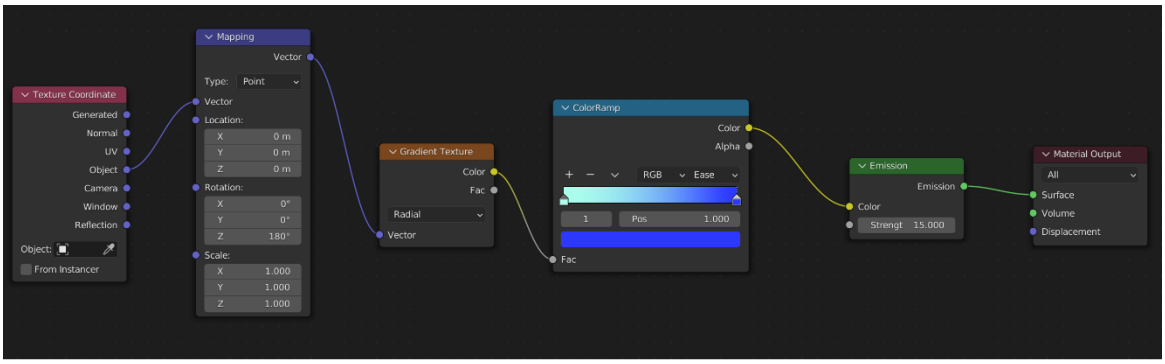

Mapping
Vector
Type:
Point
Vector
Location:
X
0 m
Y
0 m
Z
0 m
Rotation:
X
0°
Y
0°
Z
0°
Scale:
X
1.000
Y
1.000
Z
1.000
Texture Coordinate
Generated
Normal
UV
Object
Camera
Window
Reflection
Object:
From Instancer
Gradient Texture
Color
Fac
Radial
Vector

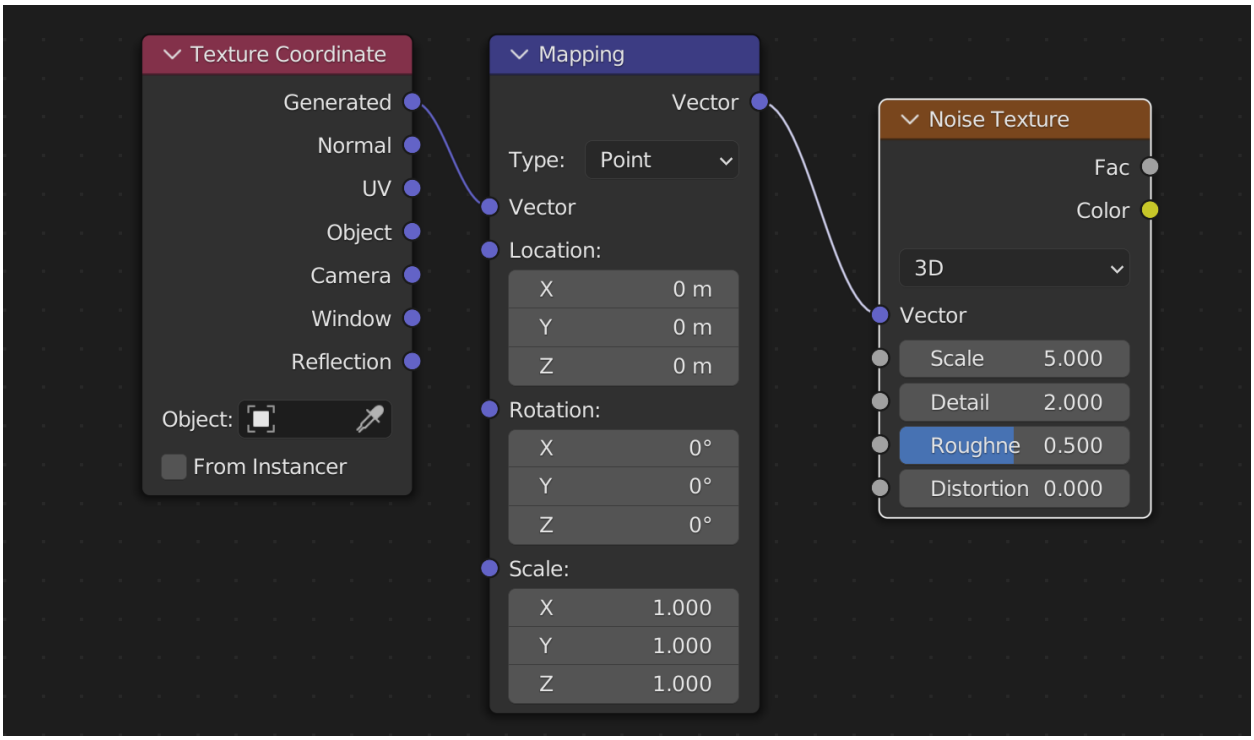


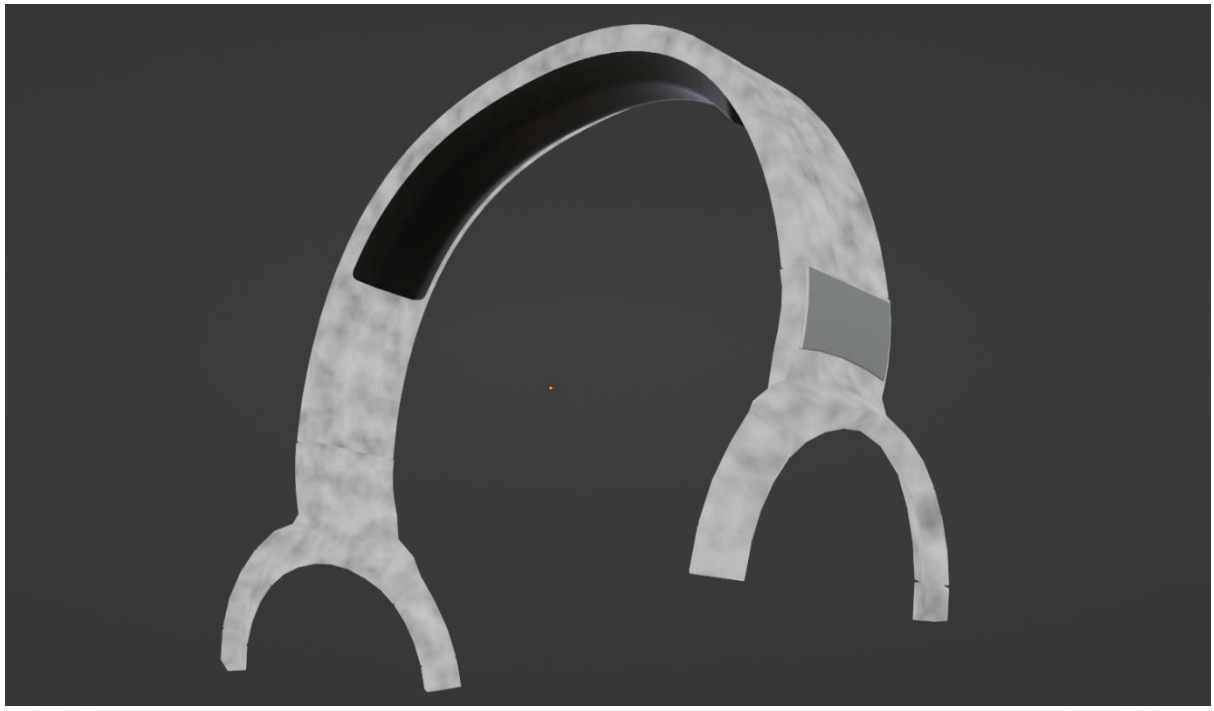

Mapping
Vector
Type: Point
Vector
Location:
X 0 m
Y 0 m
Z 0 m
Rotation:
X 0°
Y 0°
Z 180°
Scale:
X 1.000
Y 1.000
Z 1.000
Texture Coordinate
Generated
Normal
UV
Object
Camera
Window
Reflection
Object:
From Instancer
Gradient Texture
Color
Fac
Radial
Vector

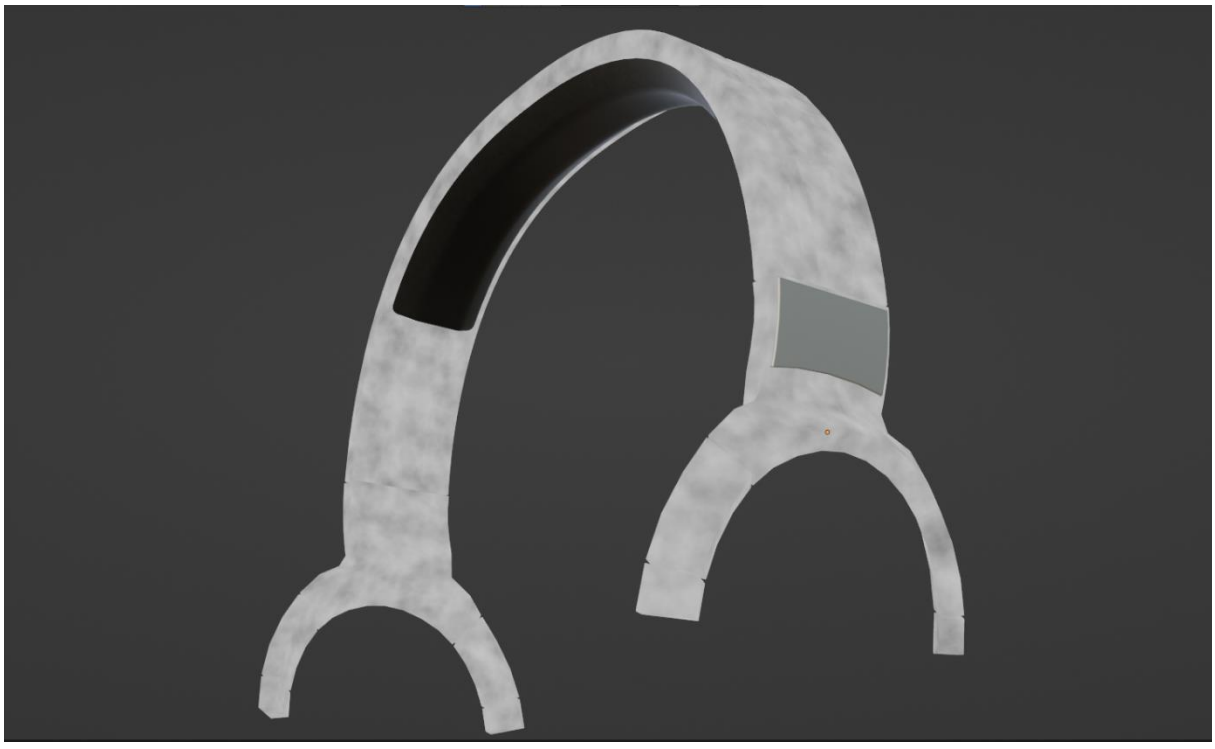

ColorRamp
Color
Alpha
RGB
Linear
1
Pos 1.000
Fac
Gradient Texture
Color
Fac
Radial
Vector

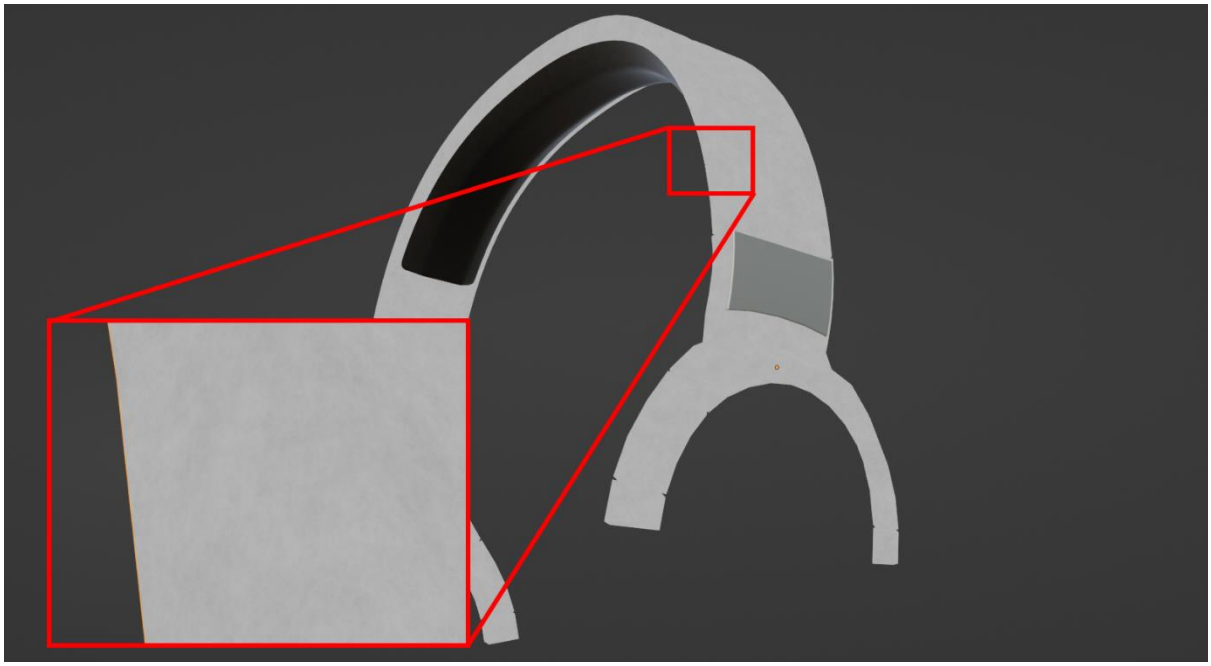

ColorRamp
Color
Alpha
RGB
Linear
Ease
Cardinal
Linear
B-Spline
Constant
Interpolation
1
Pos
Fac
Gradient Texture
Color
Fac
Radial
Vector
Emission
Emission
Color
Strengt 15.000

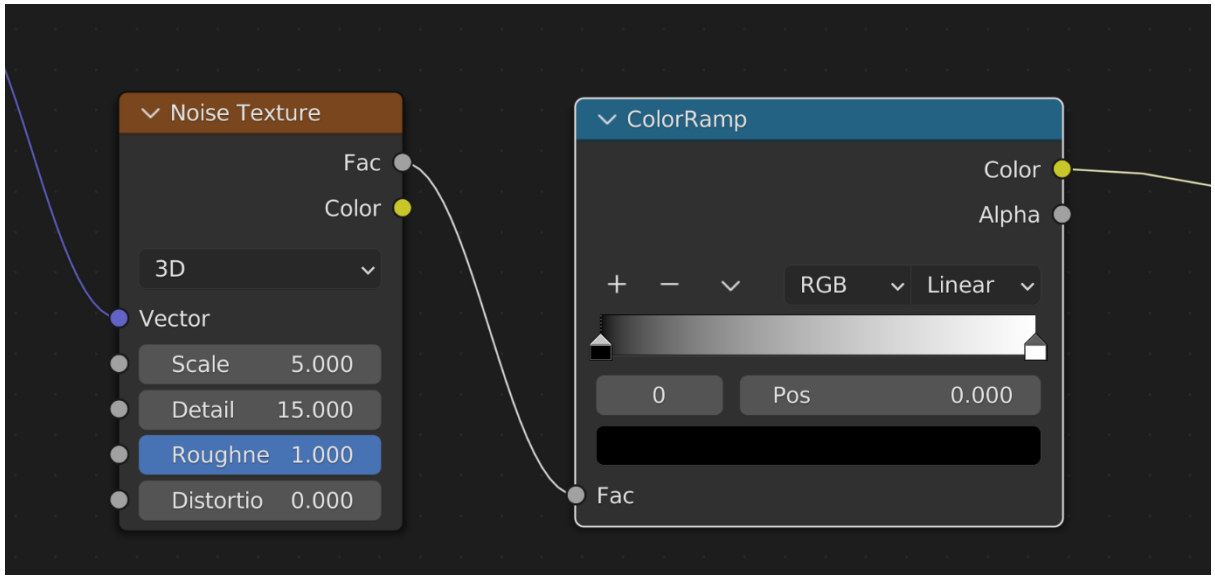

Texture Coordinate
Generated
Normal
UV
Object
Camera
Window
Reflection
Object:
From Instancer
Mapping
Vector
Type: Point
Vector
Location:
X 0 m
Y 0 m
Z 0 m
Rotation:
X 0°
Y 0°
Z 180°
Scale:
X 1.000
Y 1.000
Z 1.000
Gradient Texture
Color
Fac
Radial
Vector
ColorRamp
Color
Alpha
RGB Ease
1
Pos 1.000
Fac
Emission
Emission
Color
Strengt 15.000
Material Output
All
Surface
Volume
Displacement

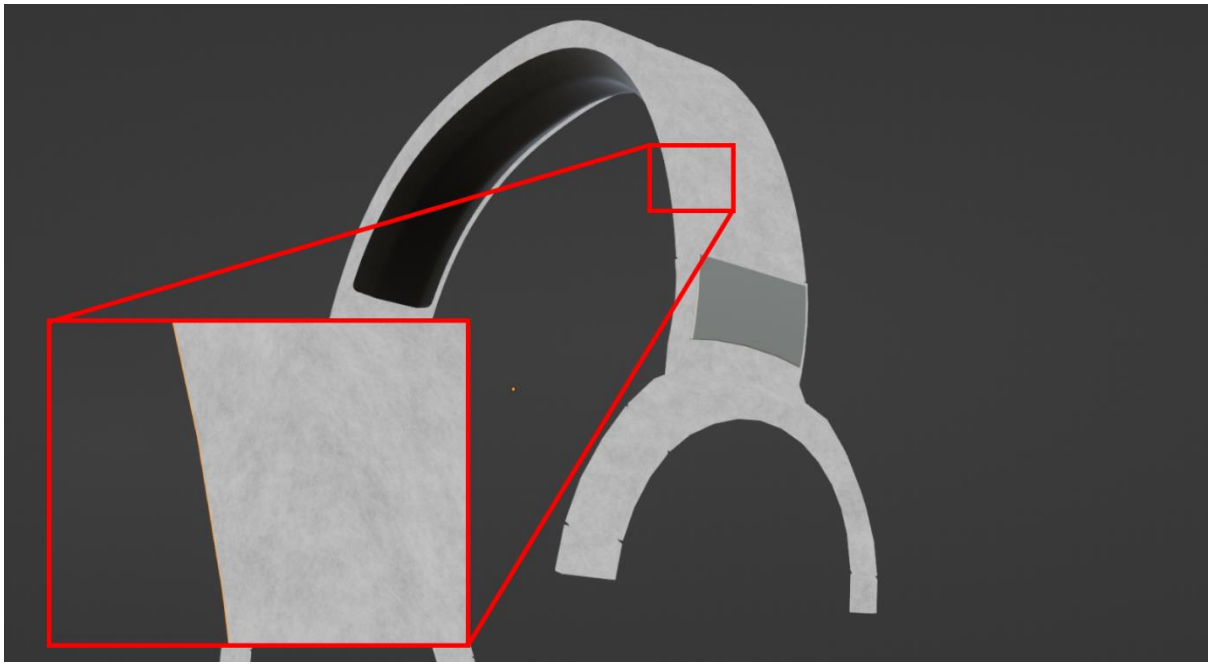

Texture Coordinate
Generated
Normal
UV
Object
Camera
Window
Reflection
Object:
From Instancer
Mapping
Vector
Type:
Point
Vector
Location:
X 0 m
Y 0 m
Z 0 m
Rotation:
X 0°
Y 0°
Z 0°
Scale:
X 1.000
Y 1.000
Z 1.000
Noise Texture
Fac
Color
3D
Vector
Scale 5.000
Detail 2.000
Roughne 0.500
Distortion 0.000

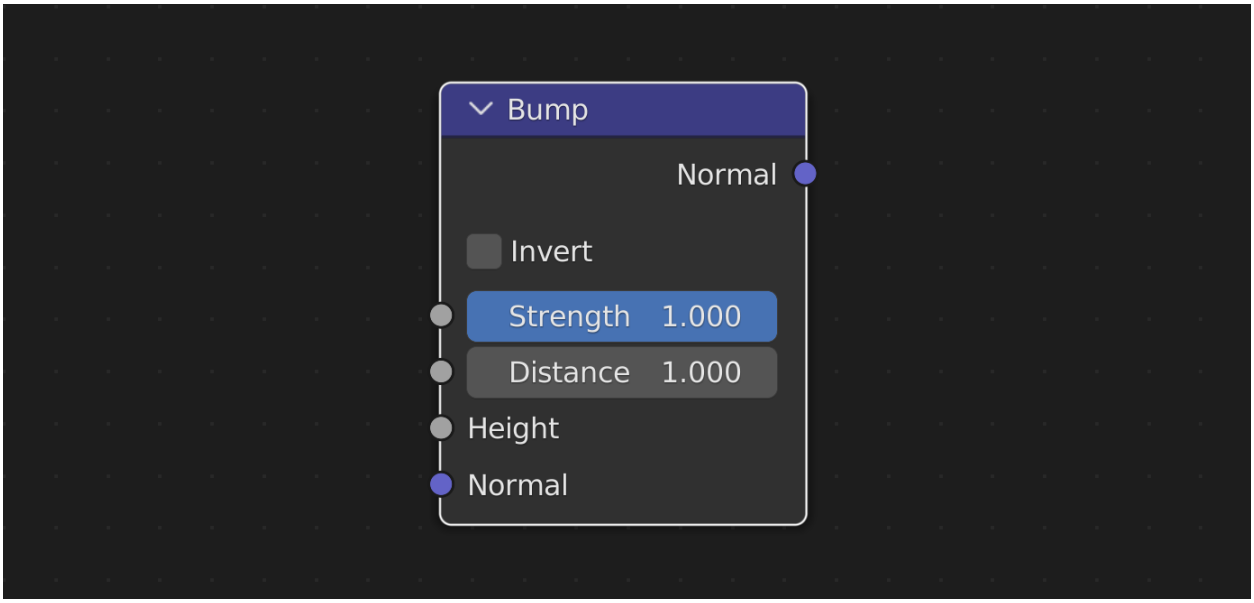


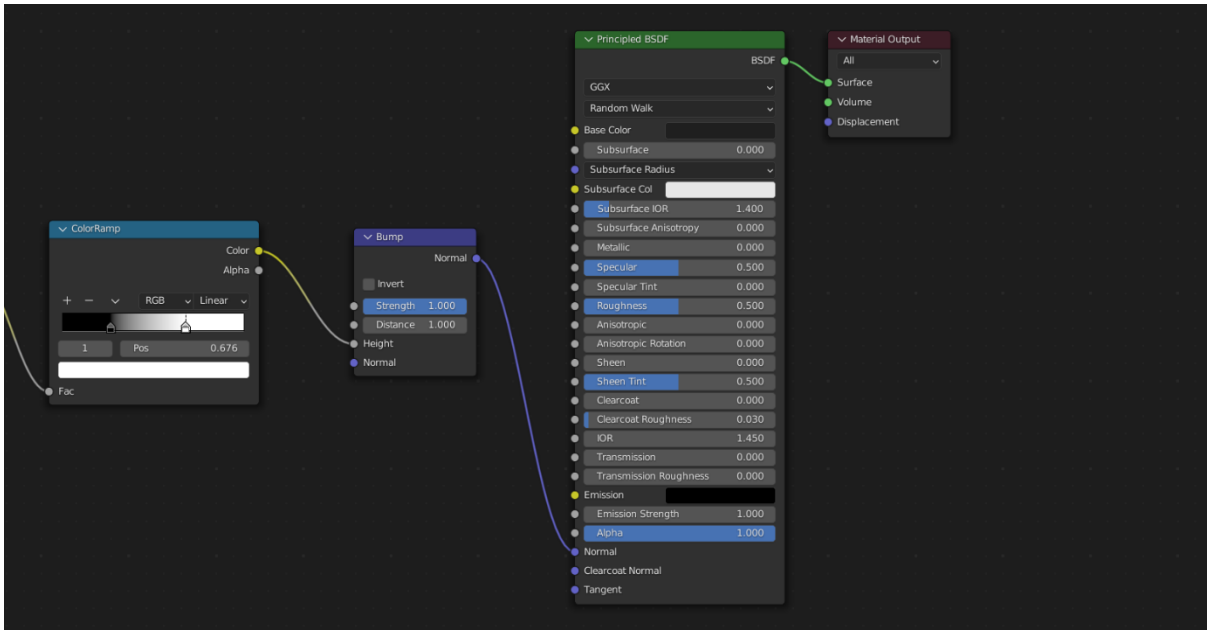


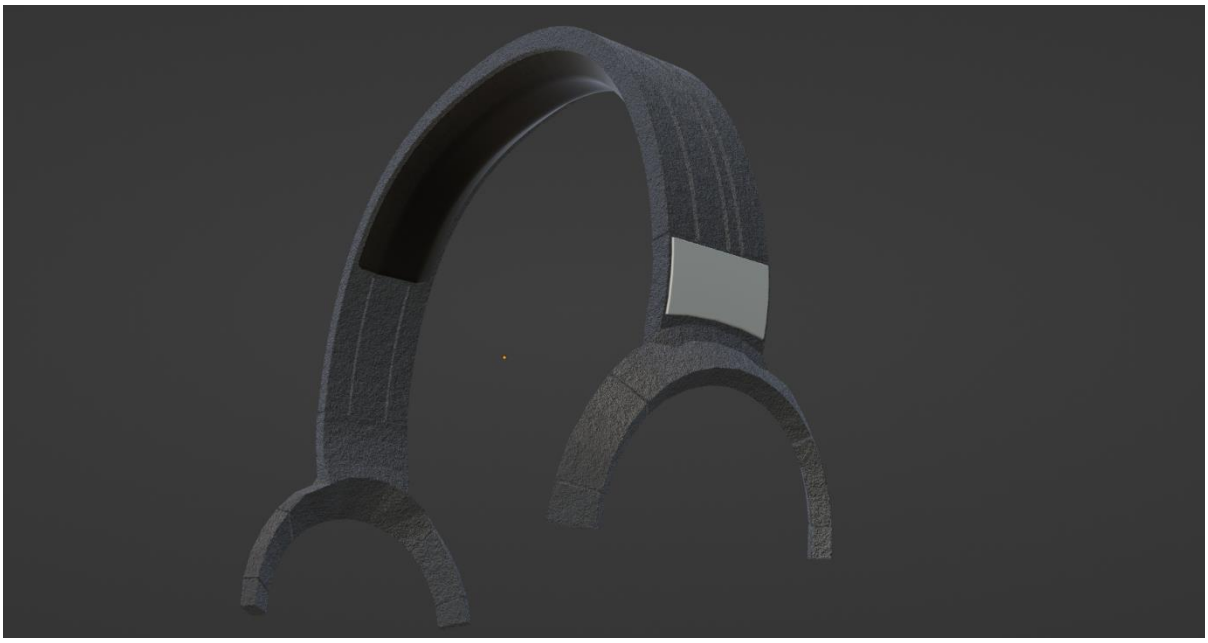


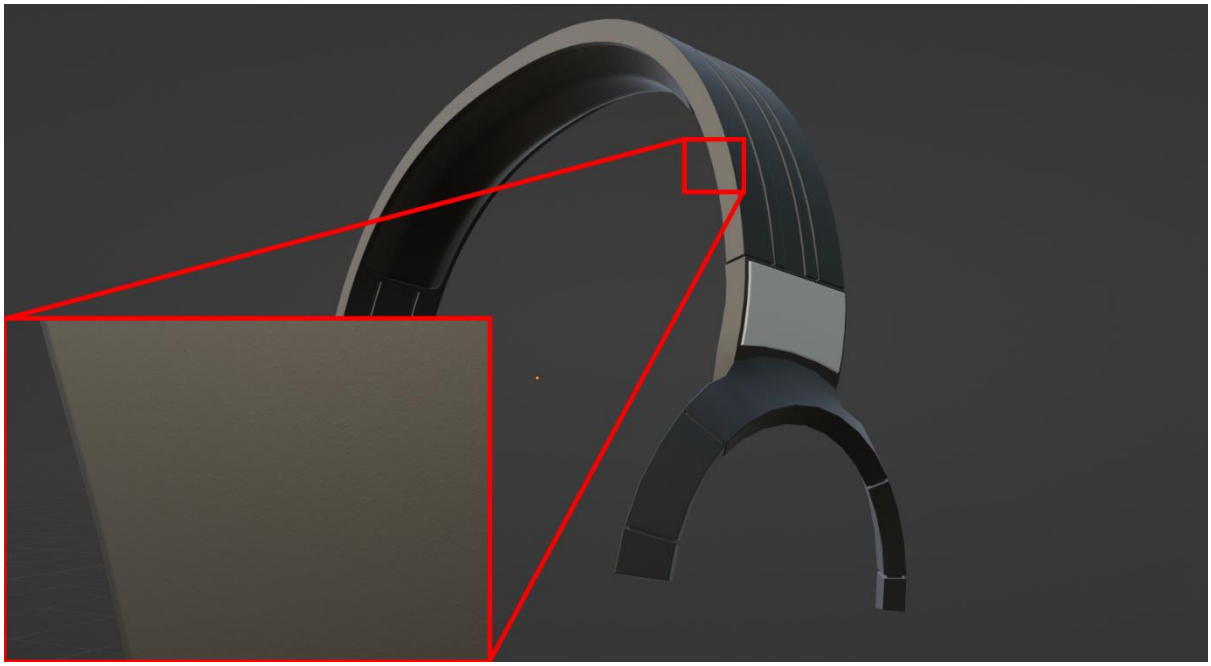

Noise Texture
Fac
Color
3D
Vector
Scale 5.000
Detail 15.000
Roughne 1.000
Distortio 0.000
ColorRamp
Color
Alpha
RGB
Linear
0
Pos 0.000
Fac

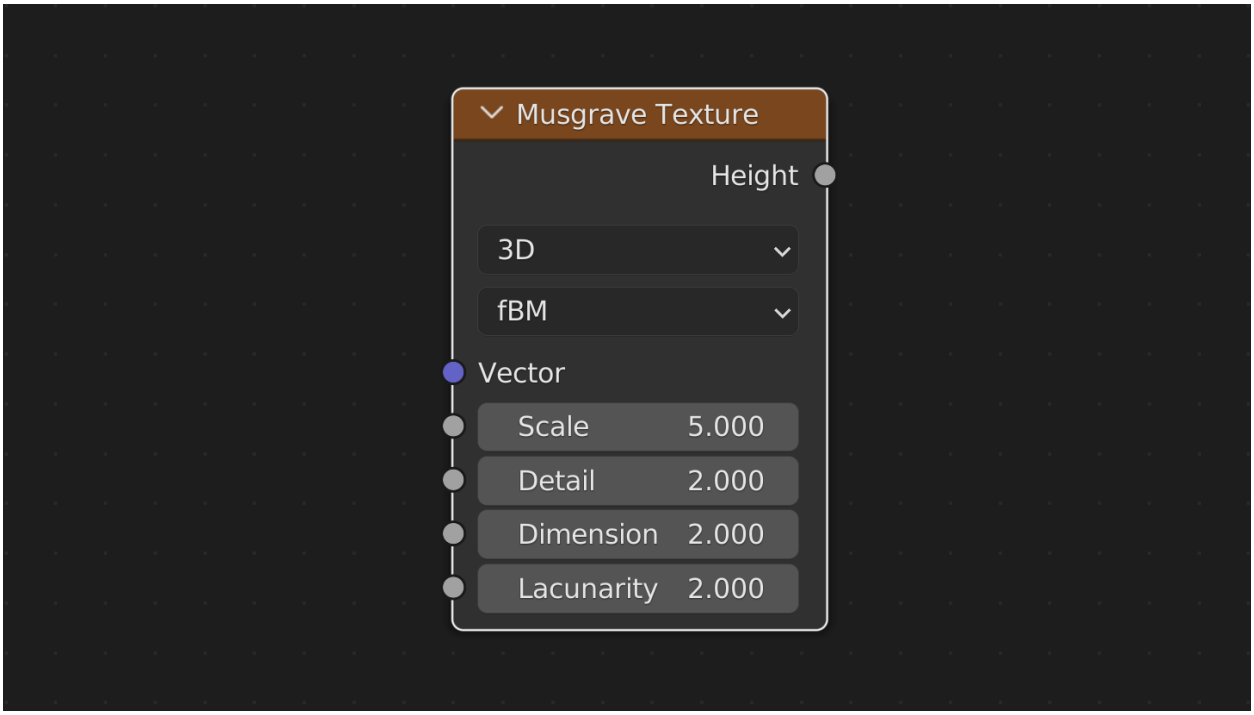


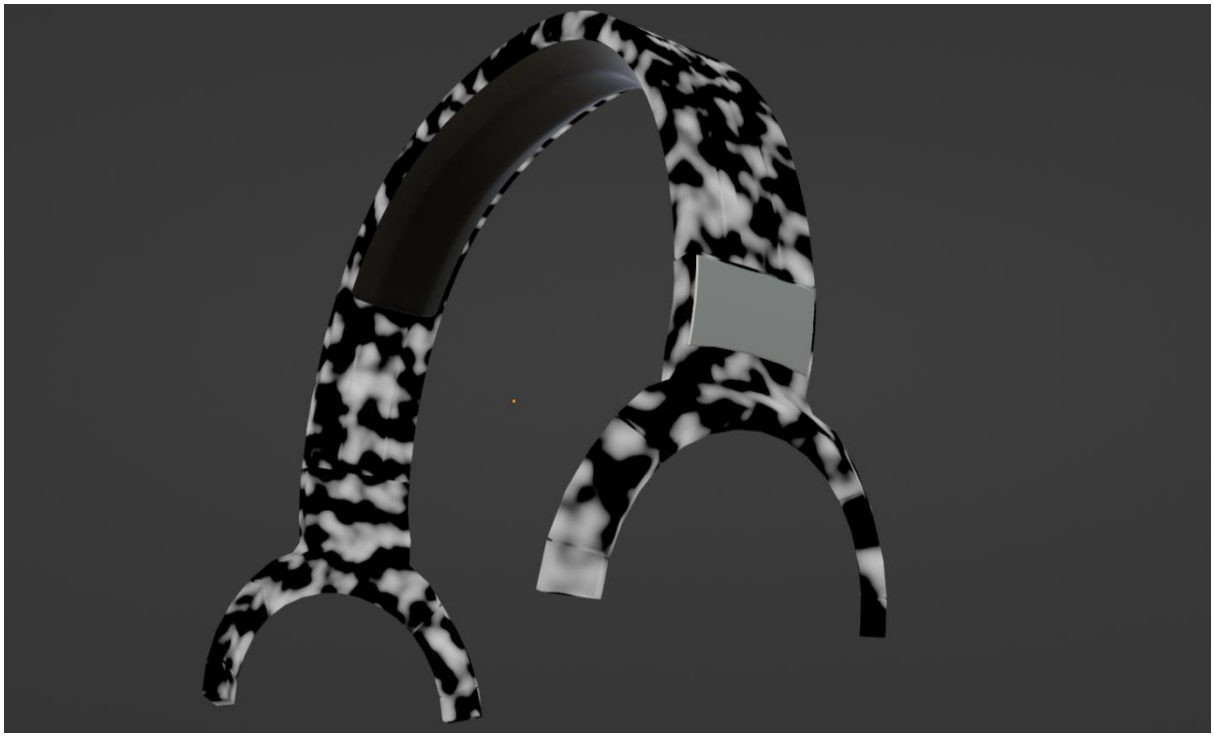

Bump
Normal
Invert
Strength 1.000
Distance 1.000
Height
Normal

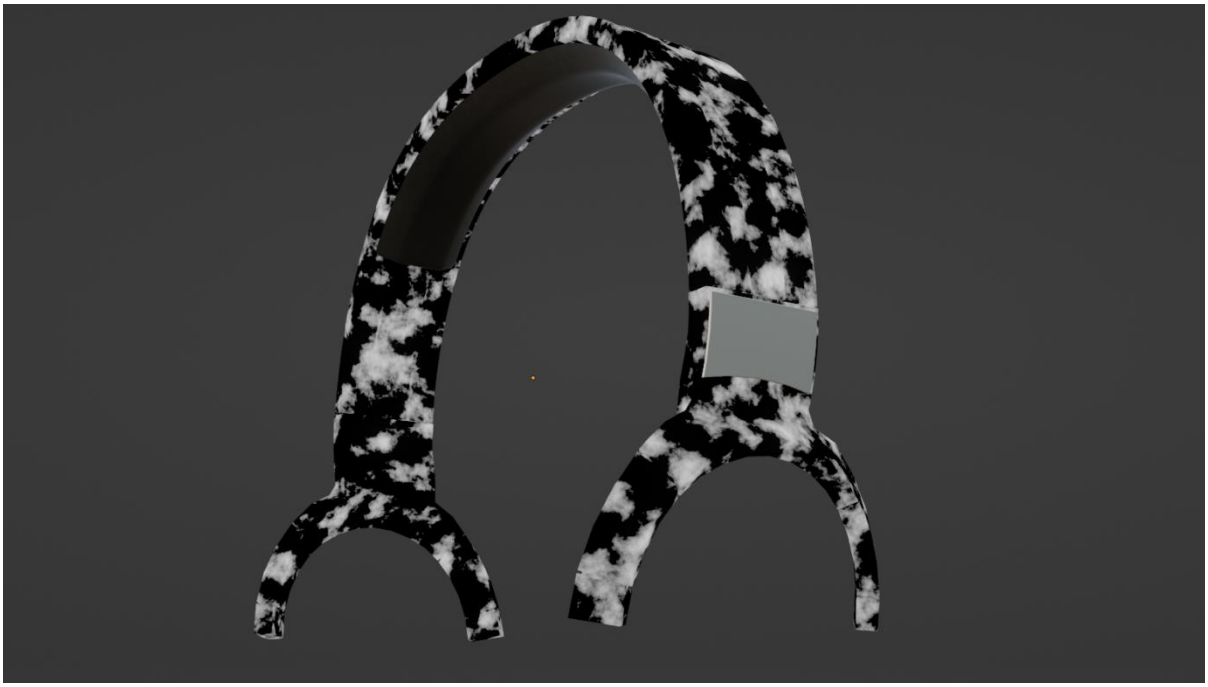

Principled BSDF
BSDF
GGX
Random Walk
Base Color
Subsurface 0.000
Subsurface Radius
Subsurface Col
Subsurface IOR 1.400
Subsurface Anisotropy 0.000
Metallic 0.000
Specular 0.500
Specular Tint 0.000
Roughness 0.500
Anisotropic 0.000
Anisotropic Rotation 0.000
Sheen 0.000
Sheen Tint 0.500
Clearcoat 0.000
Clearcoat Roughness 0.030
IOR 1.450
Transmission 0.000
Transmission Roughness 0.000
Emission
Emission Strength 1.000
Alpha 1.000
Normal
Clearcoat Normal
Tangent
Material Output
All
Surface
Volume
Displacement
ColorRamp
Color
Alpha
RGB
Linear
1
Pos 0.676
Fac
Bump
Normal
Invert
Strength 1.000
Distance 1.000
Height
Normal

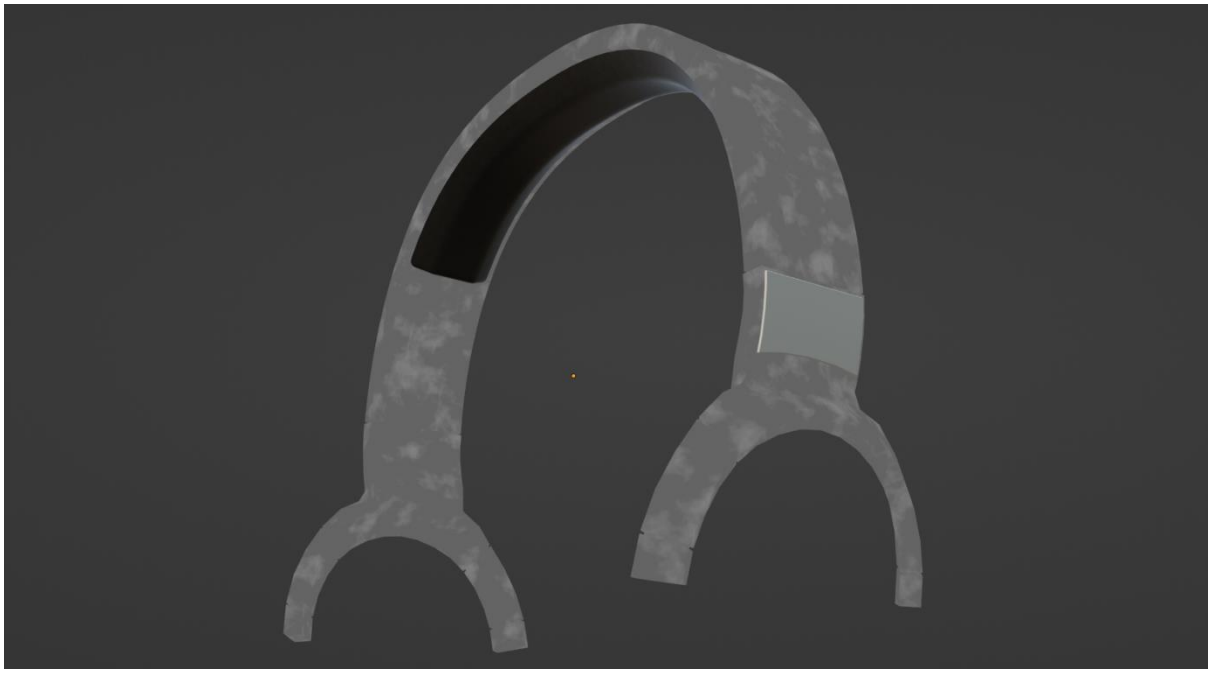


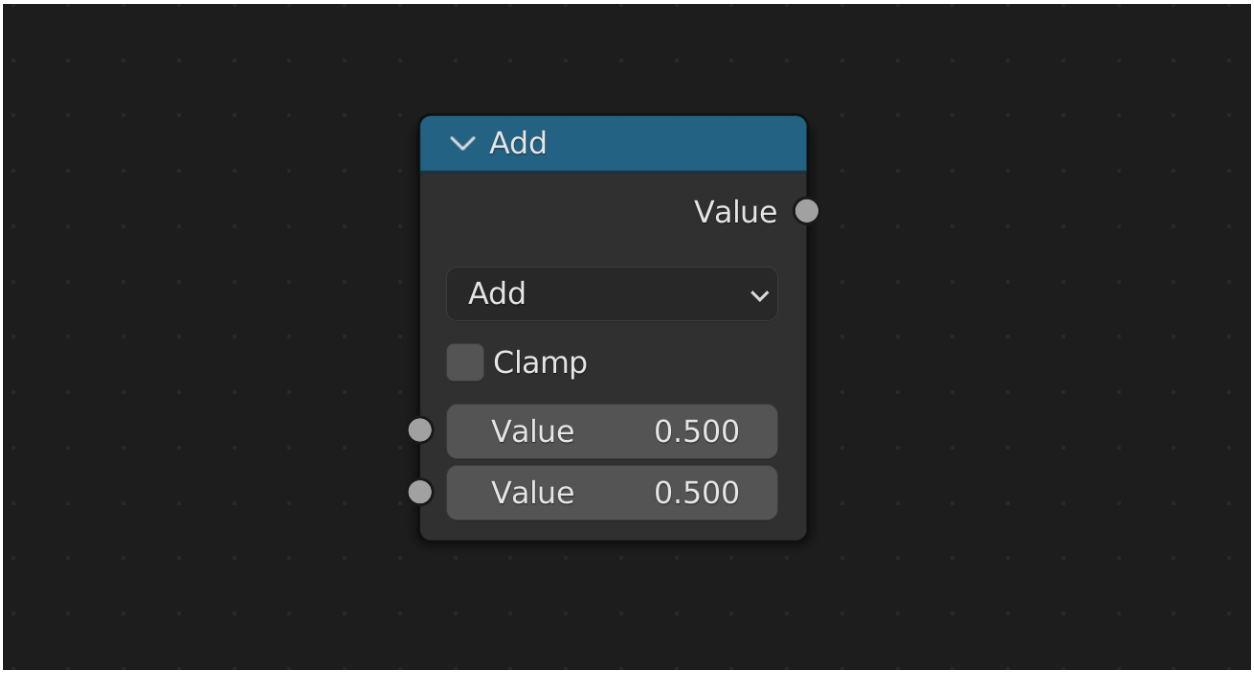


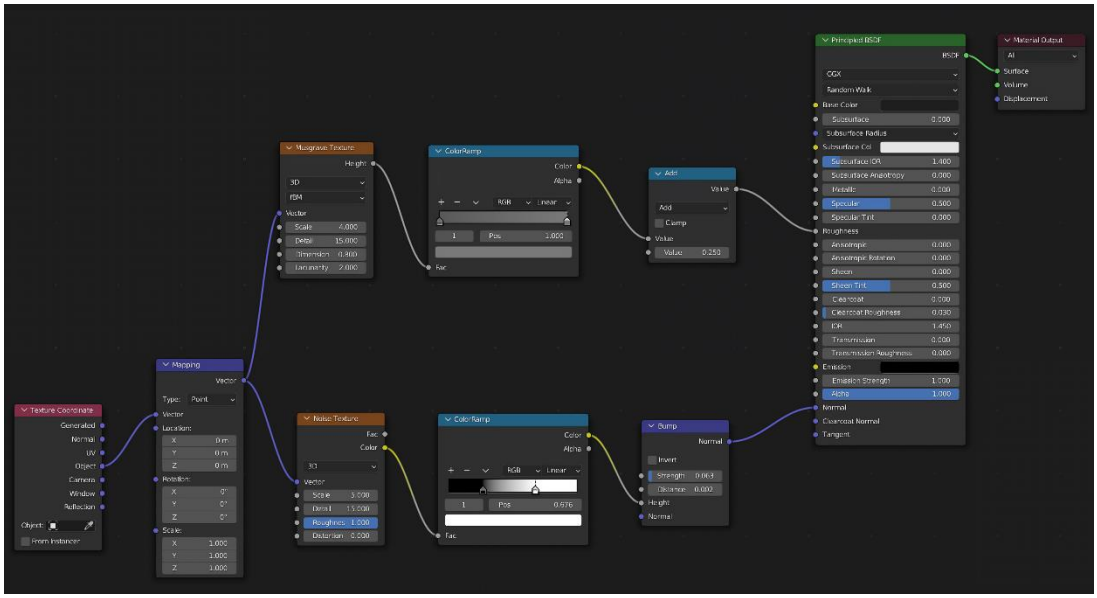

Musgrave Texture
Height
3D
fBM
Vector
Scale 5.000
Detail 2.000
Dimension 2.000
Lacunarity 2.000



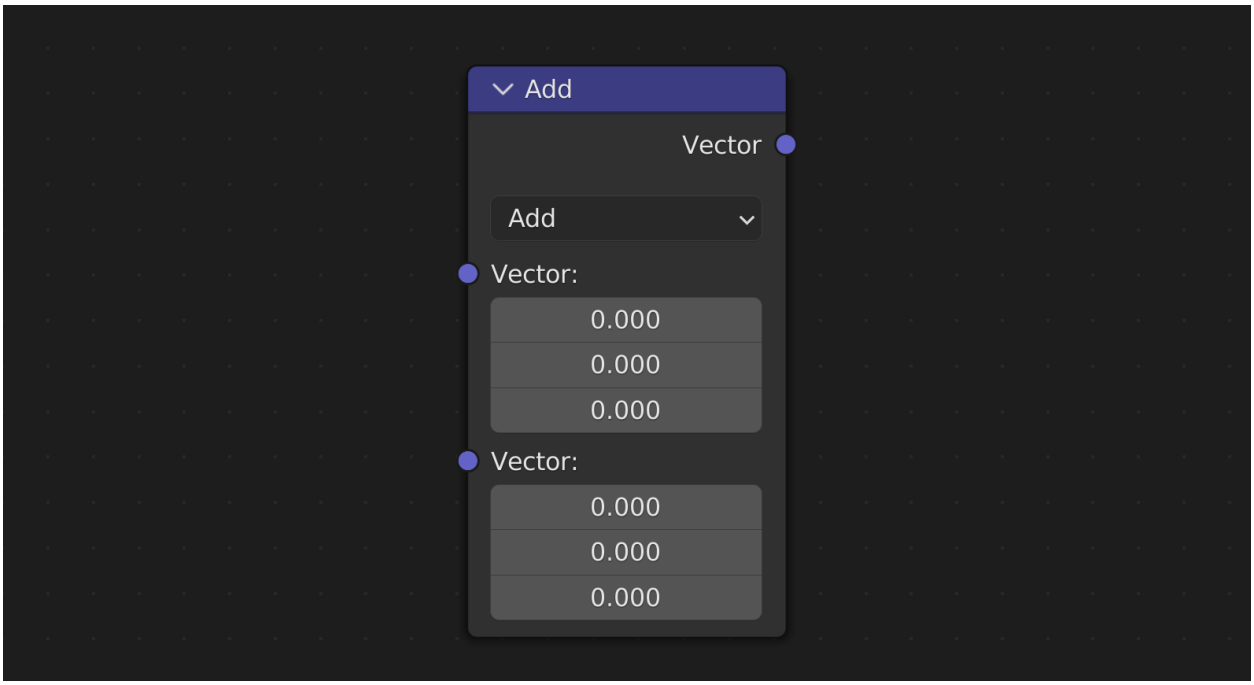


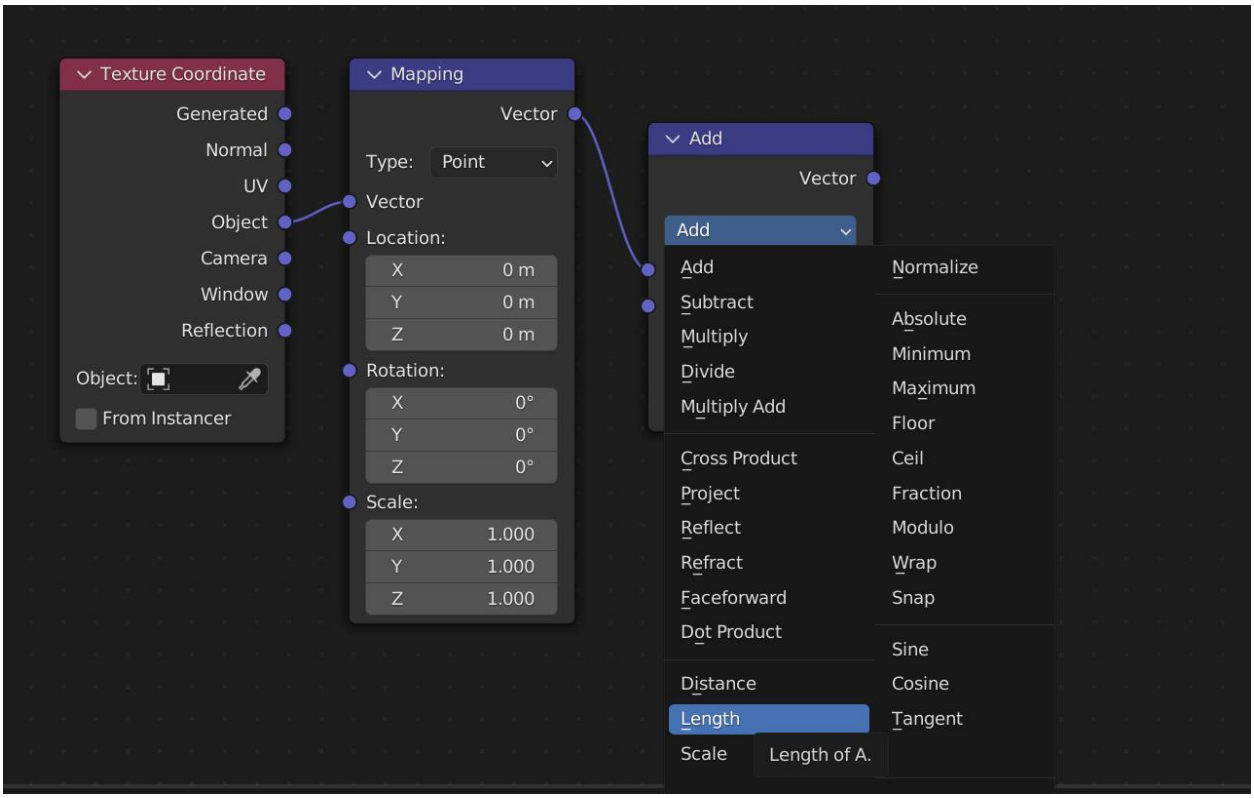


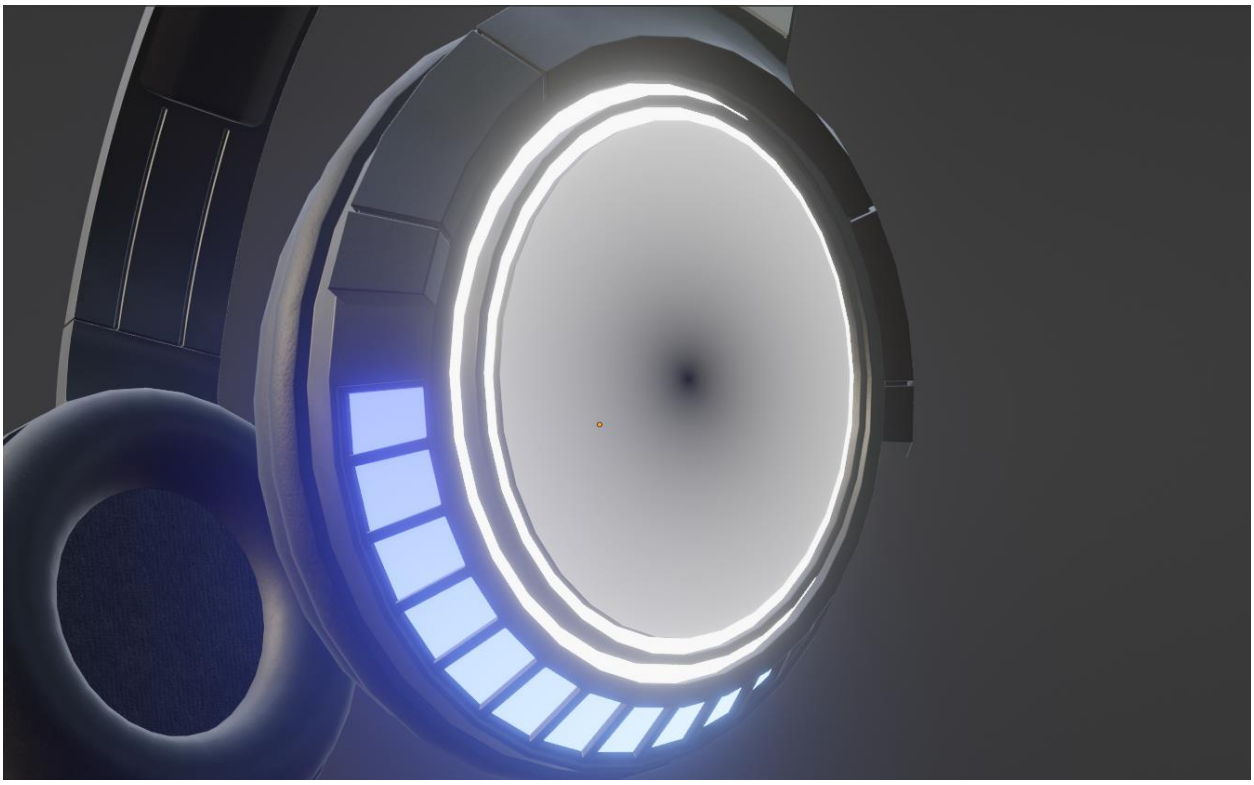

Add
Value
Add
Clamp
Value 0.500
Value 0.500

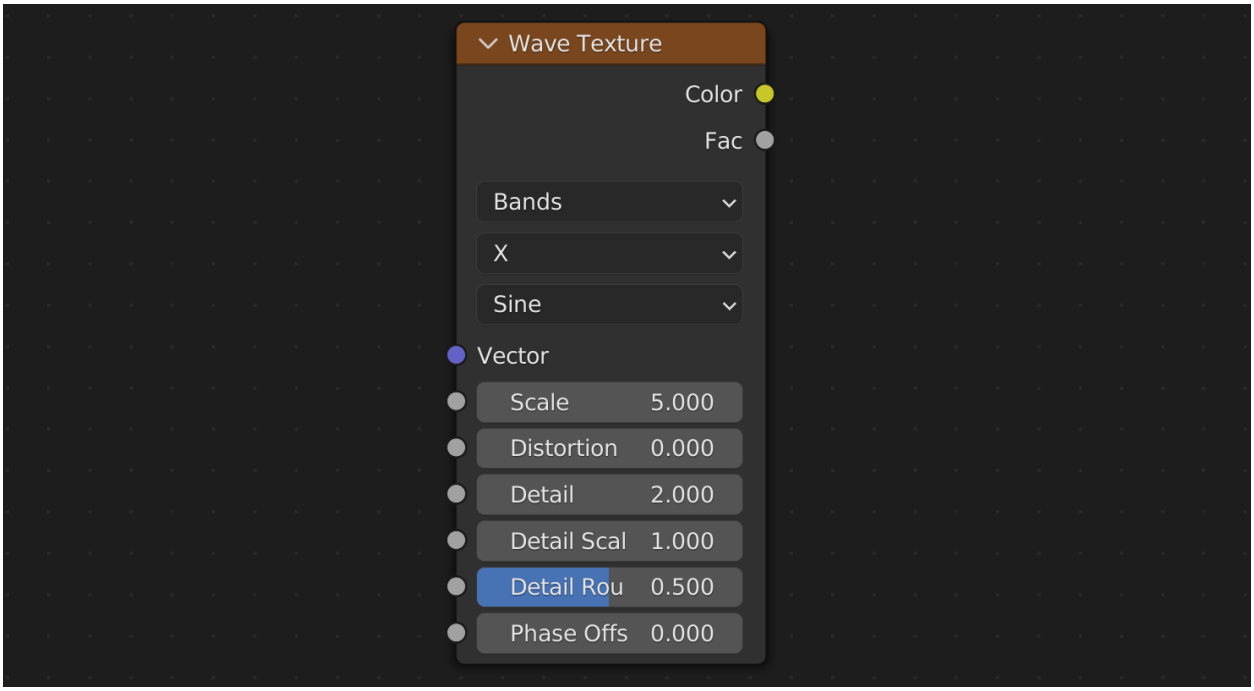

Principled BSDF
BSDF
GGX
Random Walk
Base Color
Subsurface 0.000
Subsurface Radius
Subsurface Col
Subsurface IOR 1.400
Subsurface Anisotropy 0.000
Metallic 0.000
Specular 0.500
Specular Tint 0.000
Roughness
Anisotropic 0.000
Anisotropic Rotation 0.000
Sheen 0.000
Sheen Tint 0.500
Clearcoat 0.000
Clearcoat Roughness 0.030
IOR 1.450
Transmission 0.000
Transmission Roughness 0.000
Emission
Emission Strength 1.000
Alpha 1.000
Normal
Clearcoat Normal
Tangent
Material Output
All
Surface
Volume
Displacement
Musgrave Texture
Height
3D
fBM
Vector
Scale 4.000
Detail 15.000
Dimension 0.460
Lacunarity 2.000
ColorRamp
Color
Alpha
RGB
Linear
1
Pos 1.000
Fac
Add
Value
Add
Clamp
Value
Value 0.253
Mapping
Vector
Type: Point
Vector
Location:
X 0 m
Y 0 m
Z 0 m
Rotation:
X 0°
Y 0°
Z 0°
Scale:
X 1.000
Y 1.000
Z 1.000
Texture Coordinate
Generated
Normal
UV
Object
Camera
Window
Reflection
Object:
From Instancer
Noise Texture
Fac
Color
3D
Vector
Scale 3.000
Detail 15.000
Roughness 1.000
Distortion 0.000
ColorRamp
Color
Alpha
RGB
Linear
1
Pos 0.676
Fac
Bump
Normal
Invert
Strength 0.064
Distance 0.000
Height
Normal

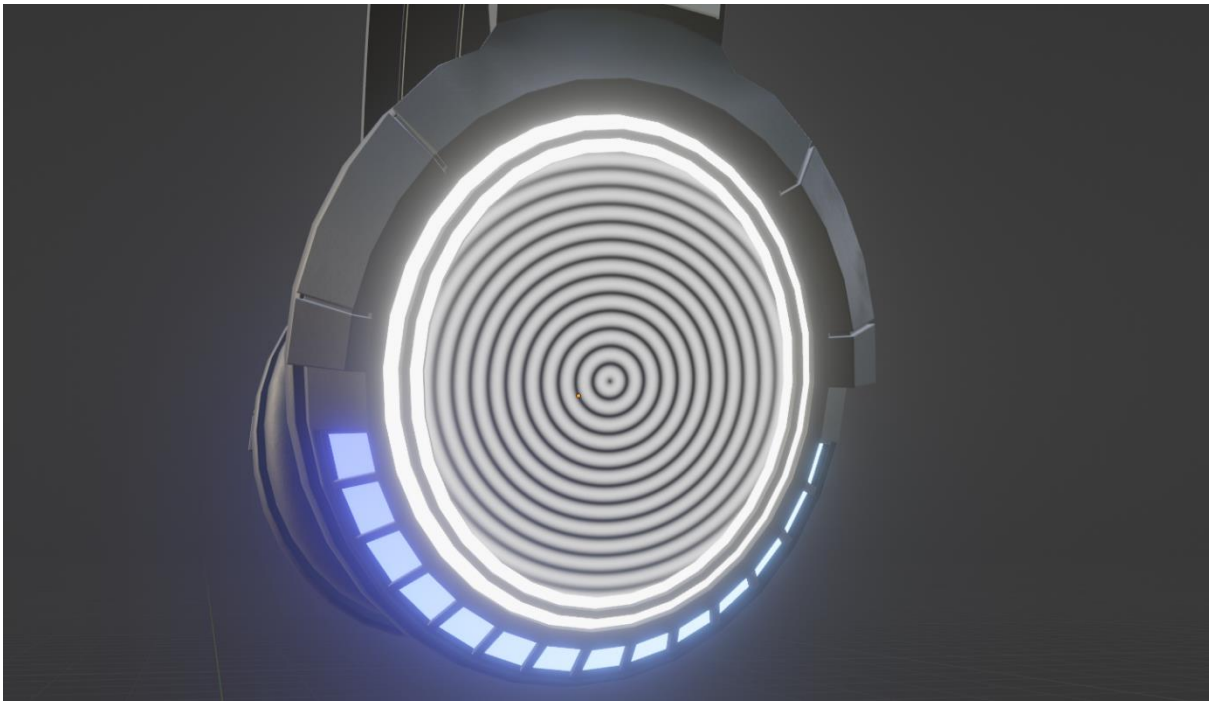
SONY

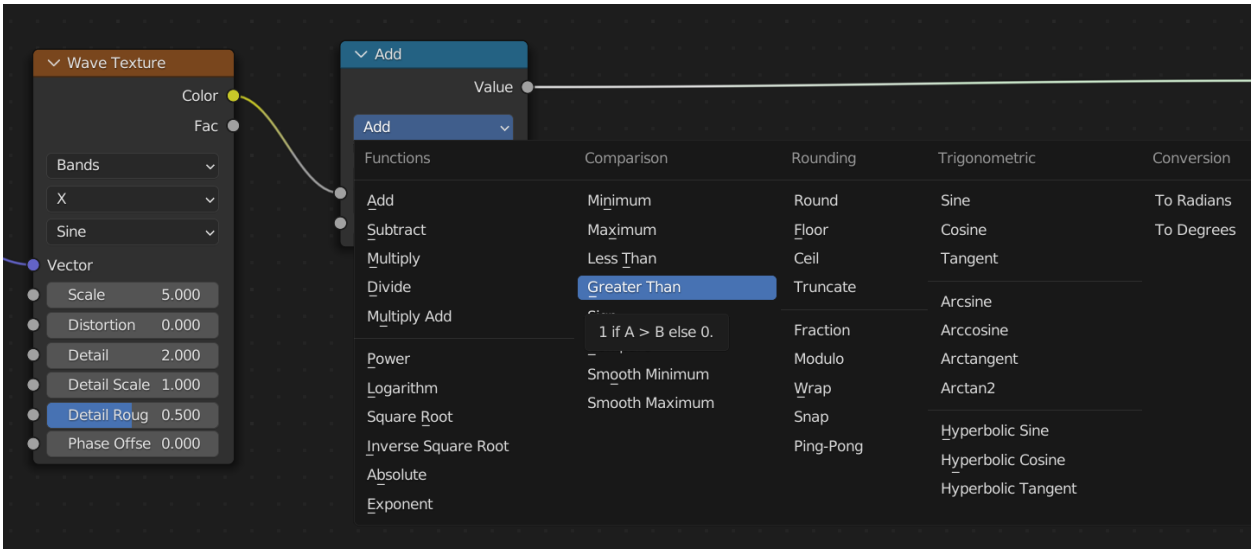

Add
Vector
Add
Vector:
0.000
0.000
0.000
Vector:
0.000
0.000
0.000

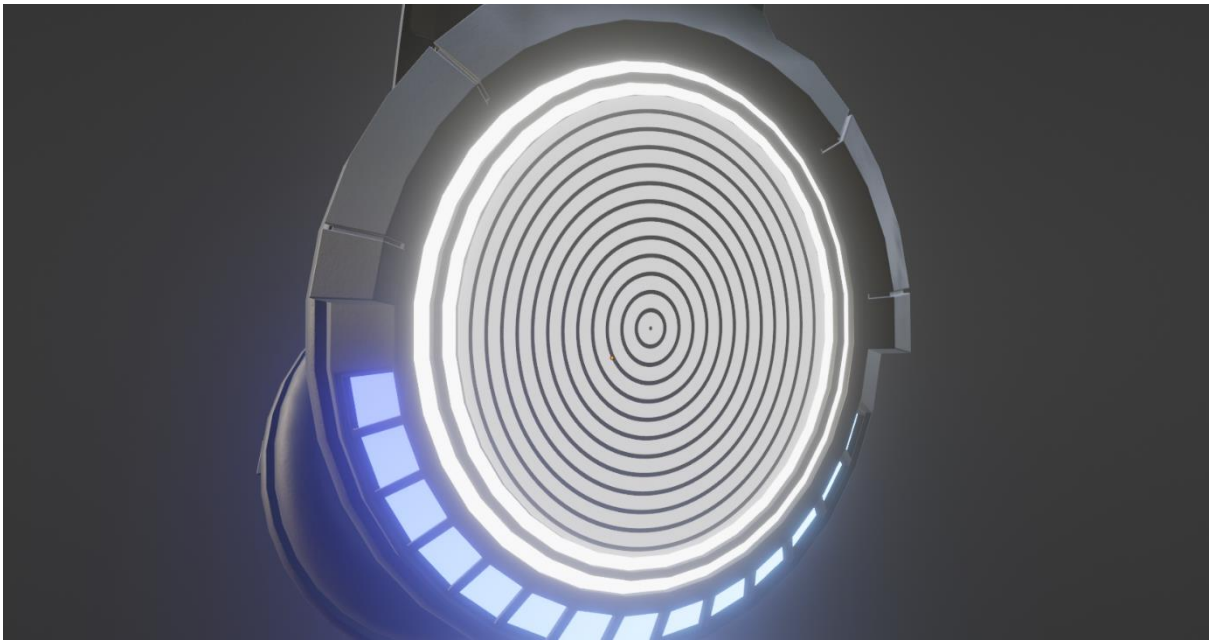

Texture Coordinate
Generated
Normal
UV
Object
Camera
Window
Reflection
Object:
From Instancer
Mapping
Vector
Type:
Point
Vector
Location:
X 0 m
Y 0 m
Z 0 m
Rotation:
X 0°
Y 0°
Z 0°
Scale:
X 1.000
Y 1.000
Z 1.000
Add
Vector
Add
Add
Subtract
Multiply
Divide
Multiply Add
Cross Product
Project
Reflect
Refract
Faceforward
Dot Product
Distance
Length
Scale
Length of A.
Normalize
Absolute
Minimum
Maximum
Floor
Ceil
Fraction
Modulo
Wrap
Snap
Sine
Cosine
Tangent

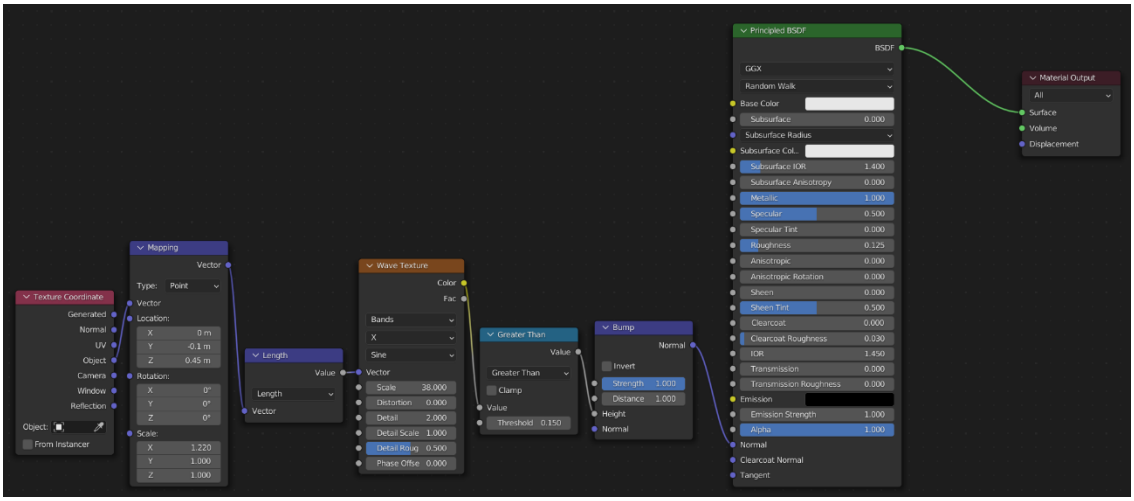


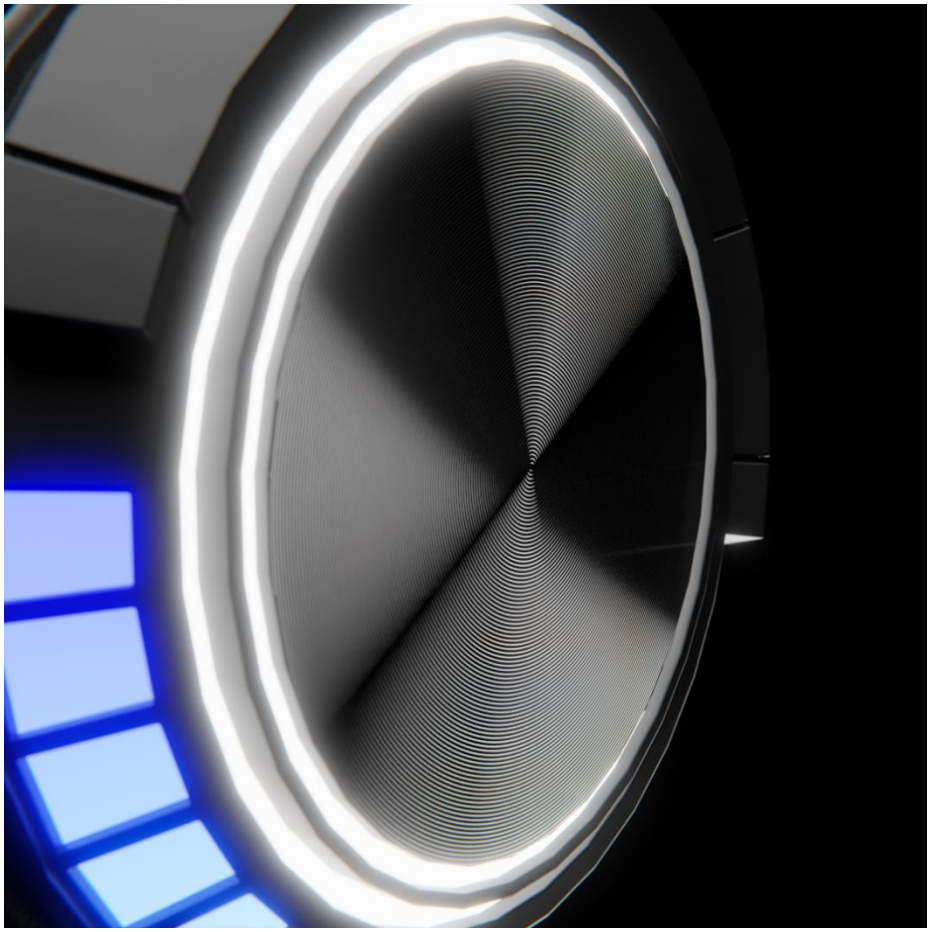

Wave Texture
Color
Fac
Bands
X
Sine
Vector
Scale 5.000
Distortion 0.000
Detail 2.000
Detail Scal 1.000
Detail Rou 0.500
Phase Offs 0.000



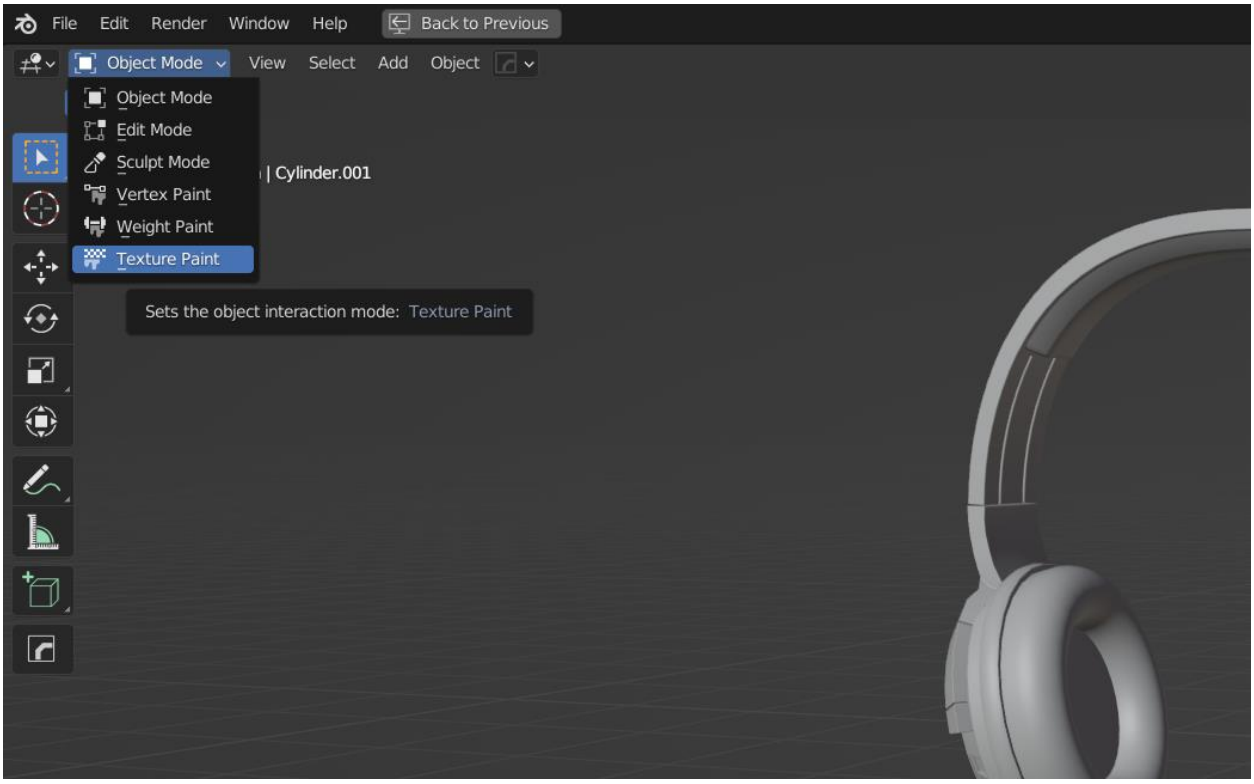

Wave Texture
Color
Fac
Bands
X
Sine
Vector
Scale 5.000
Distortion 0.000
Detail 2.000
Detail Scale 1.000
Detail Roug 0.500
Phase Offse 0.000
Add
Value
Add
Functions
Add
Subtract
Multiply
Divide
Multiply Add
Power
Logarithm
Square Root
Inverse Square Root
Absolute
Exponent
Comparison
Minimum
Maximum
Less Than
Greater Than
1 if A > B else 0.
Smooth Minimum
Smooth Maximum
Rounding
Round
Floor
Ceil
Truncate
Fraction
Modulo
Wrap
Snap
Ping-Pong
Trigonometric
Sine
Cosine
Tangent
Arcsine
Arccosine
Arctangent
Arctan2
Hyperbolic Sine
Hyperbolic Cosine
Hyperbolic Tangent
Conversion
To Radians
To Degrees




Texture Coordinate
Generated
Normal
UV
Object
Camera
Window
Reflection
Object:
From Instancer
Mapping
Vector
Type: Point
Vector
Location:
X 0 m
Y -0.1 m
Z 0.45 m
Rotation:
X 0°
Y 0°
Z 0°
Scale:
X 1.220
Y 1.000
Z 1.000
Length
Value
Length
Vector
Wave Texture
Color
Fac
Bands
X
Sine
Vector
Scale 38.000
Distortion 0.000
Detail 2.000
Detail Scale 1.000
Detail Roug 0.500
Phase Offse 0.000
Greater Than
Value
Greater Than
Clamp
Value
Threshold 0.150
Bump
Normal
Invert
Strength 1.000
Distance 1.000
Height
Normal
Principled BSDF
BSDF
GGX
Random Walk
Base Color
Subsurface 0.000
Subsurface Radius
Subsurface Col...
Subsurface IOR 1.400
Subsurface Anisotropy 0.000
Metallic 1.000
Specular 0.500
Specular Tint 0.000
Roughness 0.125
Anisotropic 0.000
Anisotropic Rotation 0.000
Sheen 0.000
Sheen Tint 0.500
Clearcoat 0.000
Clearcoat Roughness 0.030
IOR 1.450
Transmission 0.000
Transmission Roughness 0.000
Emission
Emission Strength 1.000
Alpha 1.000
Normal
Clearcoat Normal
Tangent
Material Output
All
Surface
Volume
Displacement



Chapter 5: Texture Painting and Using Real-Life Images as Textures



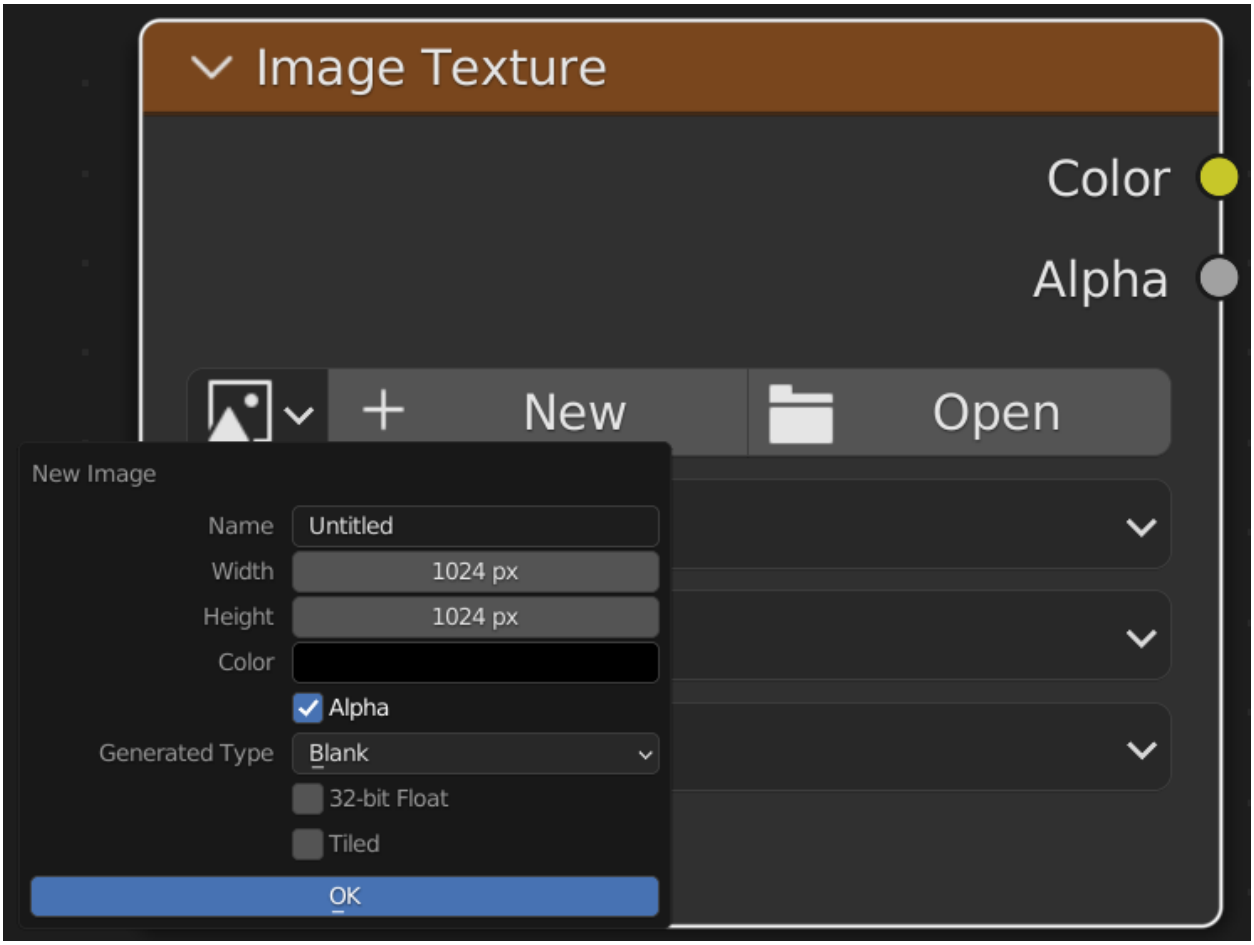
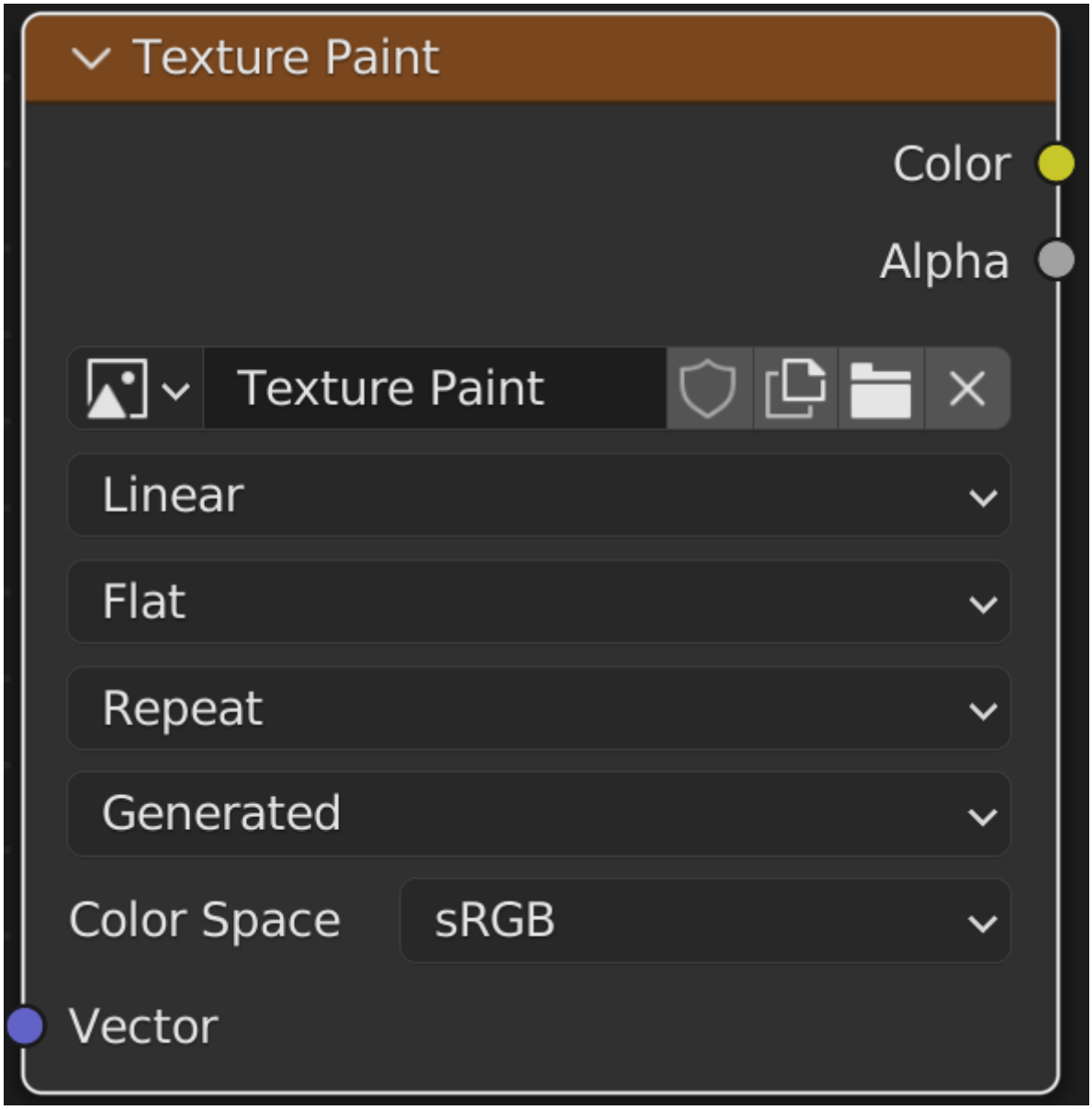
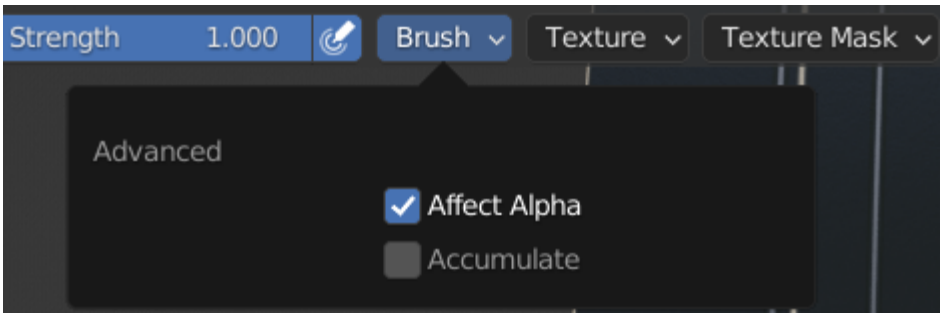


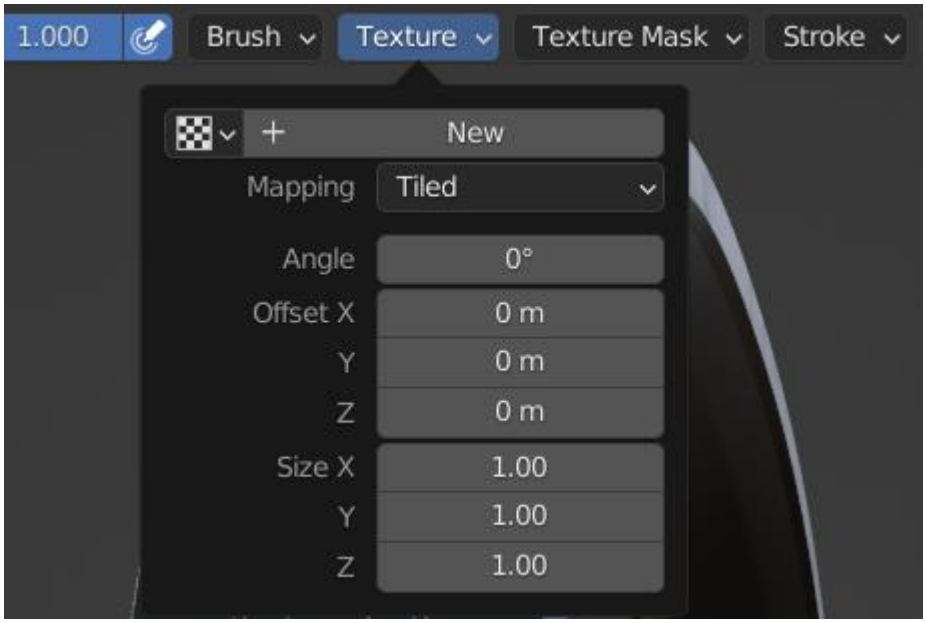
Image Texture
Color
Alpha
New
Open
New Image
Name
Untitled
Width
1024 px
Height
1024 px
Color
Alpha
Generated Type
Blank
32-bit Float
Tiled
OK

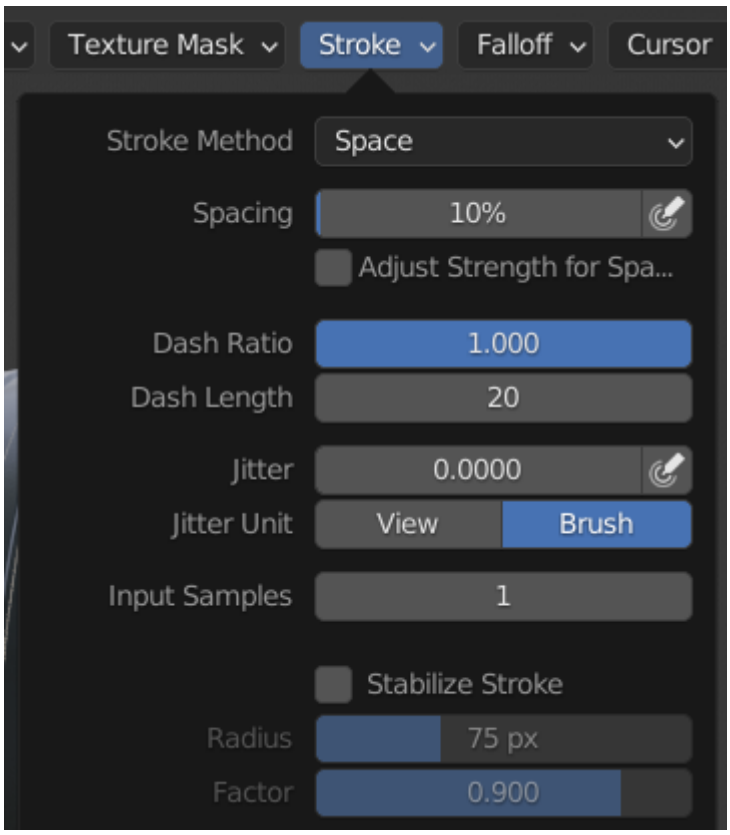

Texture Paint
Color
Alpha
Texture Paint
Linear
Flat
Repeat
Generated
Color Space
sRGB
Vector

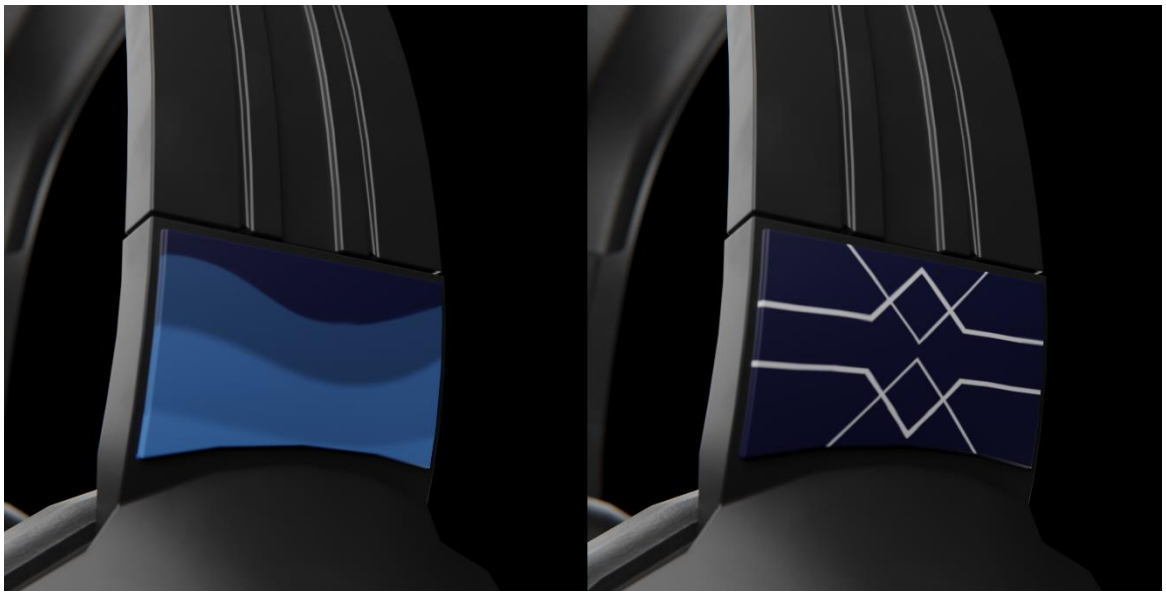
Texture Paint
View
TexDraw
Mix
Radius 8 px
Strength 1.000
Brush
Texture
Texture Mask
Stroke
Falloff
Cursor
User Perspective
(1) Cylinder.001 <>

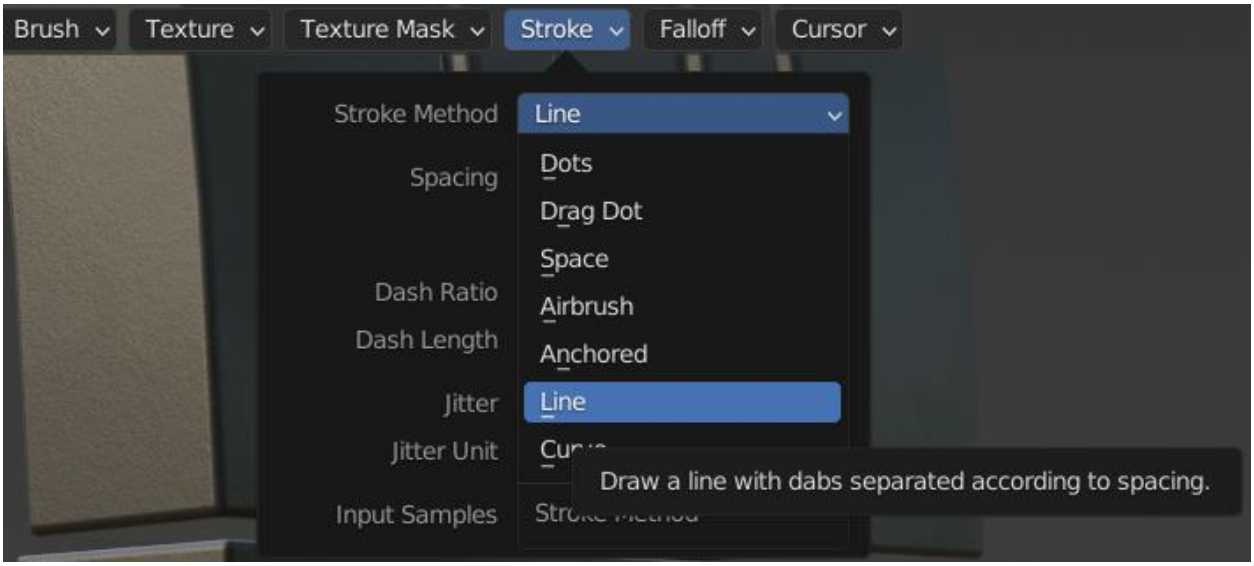
Mix
Radius 8 px
Mix
Darken
Multiply
Color Burn
Linear Burn
Lighten
Screen
Color Dodge
Add
Overlay
Soft Light
Hard Light
Vivid Light
Linear Light
Pin Light
Difference
Exclusion
Subtract
Hue
Saturation
Color
Value
Erase Alpha
Add Alpha
Blending Mode


Strength 1.000
Brush
Texture
Texture Mask
Advanced
Affect Alpha
Accumulate


1.000
Brush
Texture
Texture Mask
Stroke
New
Mapping
Tiled
Angle
0°
Offset X
0 m
Y
0 m
Z
0 m
Size X
1.00
Y
1.00
Z
1.00

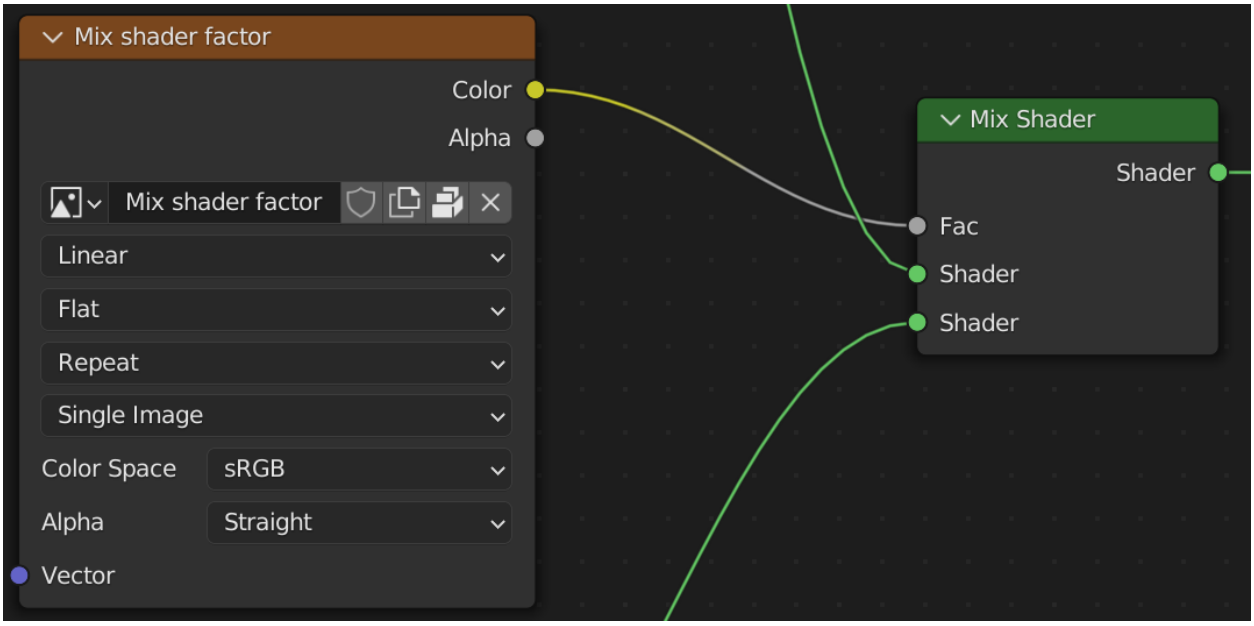

Texture Mask
Stroke
Falloff
Cursor
Stroke Method
Space
Spacing
10%
Adjust Strength for Spa...
Dash Ratio
1.000
Dash Length
20
Jitter
0.0000
Jitter Unit
View
Brush
Input Samples
1
Stabilize Stroke
Radius
75 px
Factor
0.900

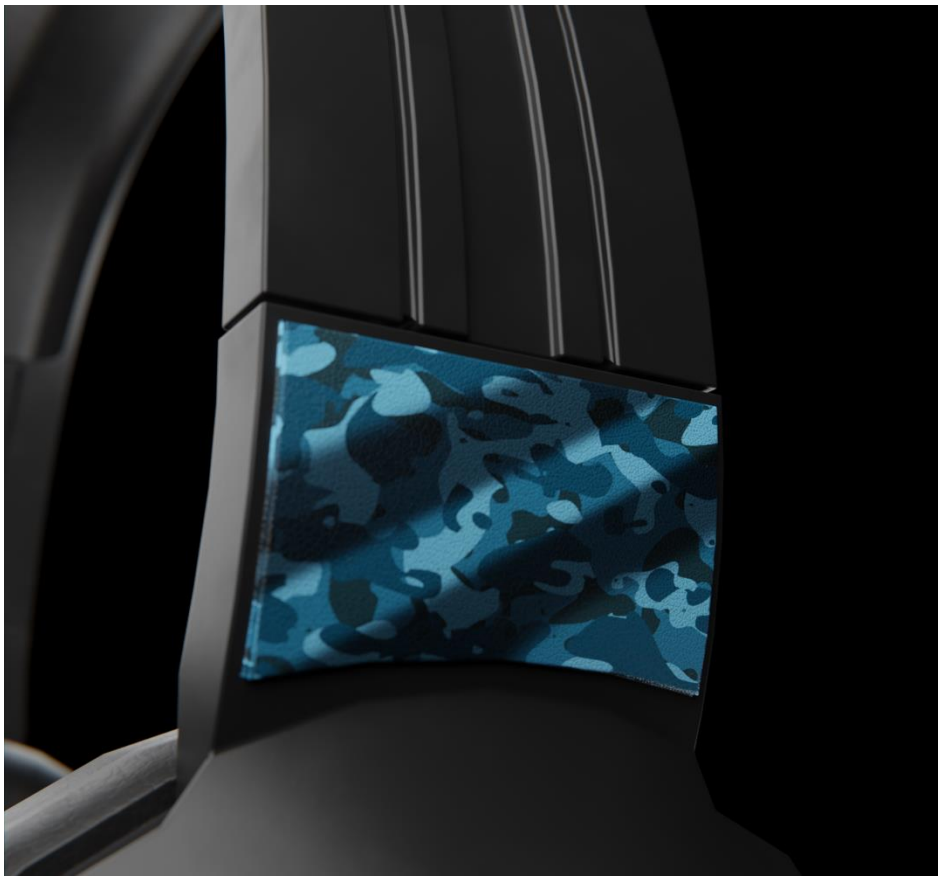


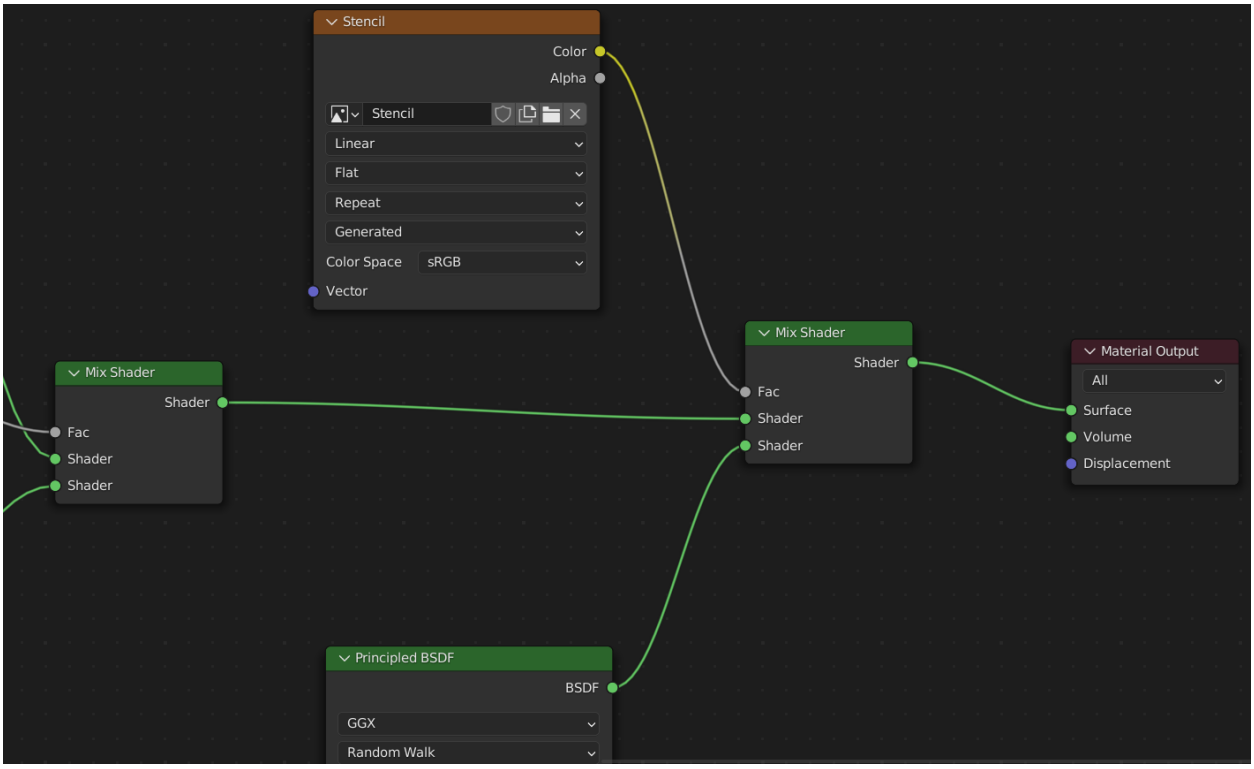

Brush
Texture
Texture Mask
Stroke
Falloff
Cursor
Stroke Method
Line
Spacing
Dots
Drag Dot
Space
Dash Ratio
Airbrush
Dash Length
Anchored
Jitter
Line
Jitter Unit
Draw a line with dabs separated according to spacing.
Input Samples

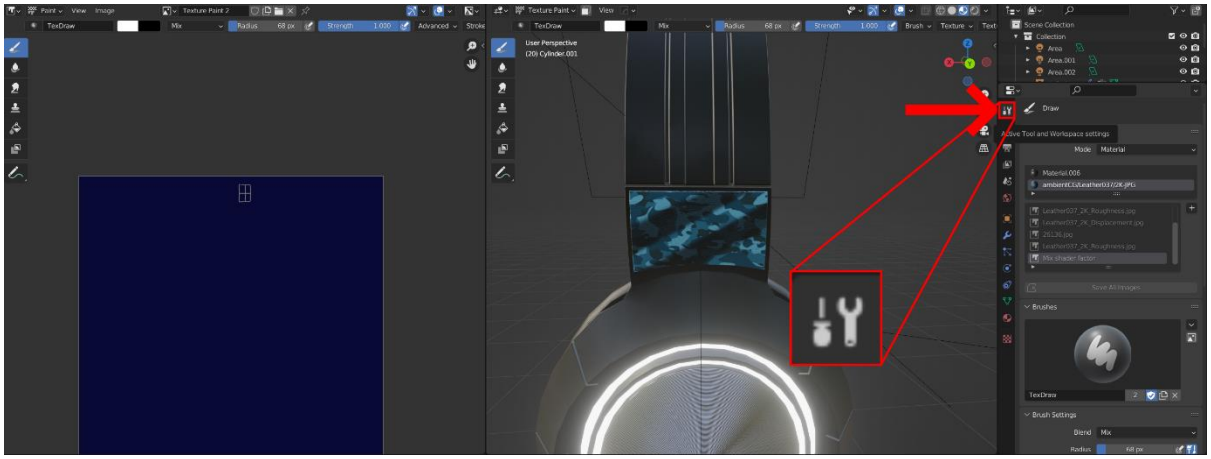
Texture Coordinates
Texture Coordinate
Generated
Normal
UV
Object
Camera
Window
Reflection
Object:
From Instancer
Mapping
Vector
Type: Point
Vector
Location:
X 0.04 m
Y 0.27 m
Z 0 m
Rotation:
X 0°
Y 0°
Z 0°
Scale:
X 7.760
Y 7.760
Z 7.760
26136.jpg
Color
Alpha
Linear
Flat
Repeat
Single Image
Color Space sRGB
Alpha Straight
Vector
Hue Saturation Value
Color
Hue 0.500
Saturation 1.000
Value 0.340
Fac 1.000
Color
Principled BSDF
BSDF
GGX
Random Walk
Base Color
Subsurface 0.000
Subsurface Radius
Subsurface Color
Subsurface IOR 1.400
Subsurface Anisotropy 0.000
Metallic 0.000
Specular 0.500
Specular Tint 0.000
Roughness
Anisotropic 0.000
Anisotropic Rotation 0.000
Sheen 0.000
Sheen Tint 0.500
Clearcoat 0.000
Clearcoat Roughness 0.030
IOR 1.450
Transmission 0.000
Transmission Roughness 0.000
Emission
Emission Strength 1.000
Alpha 1.000
Normal
Clearcoat Normal
Tangent
Leather037_2K_Roughness.jpg
Color
Alpha
Linear
Flat
Repeat
Single Image
Color Space Non-Color
Alpha Straight
Vector
Leather037_2K_Displacement.jpg
Color
Alpha
Linear
Flat
Repeat
Single Image
Color Space Non-Color
Alpha Straight
Vector
Bump
Normal
Invert
Strength 0.247
Distance 1.000
Height
Normal
Texture Coordinates
Texture Coordinate
Generated
Normal
UV
Object
Camera
Window
Reflection
Object:
From Instancer
Mapping
Vector
Type: Point
Vector
Location:
X 0.04 m
Y 0.27 m
Z 0 m
Rotation:
X 0°
Y 0°
Z 0°
Scale:
X 7.760
Y 7.760
Z 7.760
26136.jpg
Color
Alpha
Linear
Flat
Repeat
Single Image
Color Space sRGB
Alpha Straight
Vector
Hue Saturation Value
Color
Hue 0.500
Saturation 1.000
Value 1.940
Fac 1.000
Color
Principled BSDF
BSDF
GGX
Random Walk
Base Color
Subsurface 0.000
Subsurface Radius
Subsurface Color
Subsurface IOR 1.400
Subsurface Anisotropy 0.000
Metallic 0.000
Specular 0.500
Specular Tint 0.000
Roughness
Anisotropic 0.000
Anisotropic Rotation 0.000
Sheen 0.000
Sheen Tint 0.500
Clearcoat 0.000
Clearcoat Roughness 0.030
IOR 1.450
Transmission 0.000
Transmission Roughness 0.000
Emission
Emission Strength 1.000
Alpha 1.000
Normal
Clearcoat Normal
Tangent
Leather037_2K_Roughness.jpg
Color
Alpha
Linear
Flat
Repeat
Single Image
Color Space Non-Color
Alpha Straight
Vector
Leather037_2K_Displacement.jpg
Color
Alpha
Linear
Flat
Repeat
Single Image
Color Space Non-Color
Alpha Straight
Vector
Bump
Normal
Invert
Strength 0.247
Distance 1.000
Height
Normal

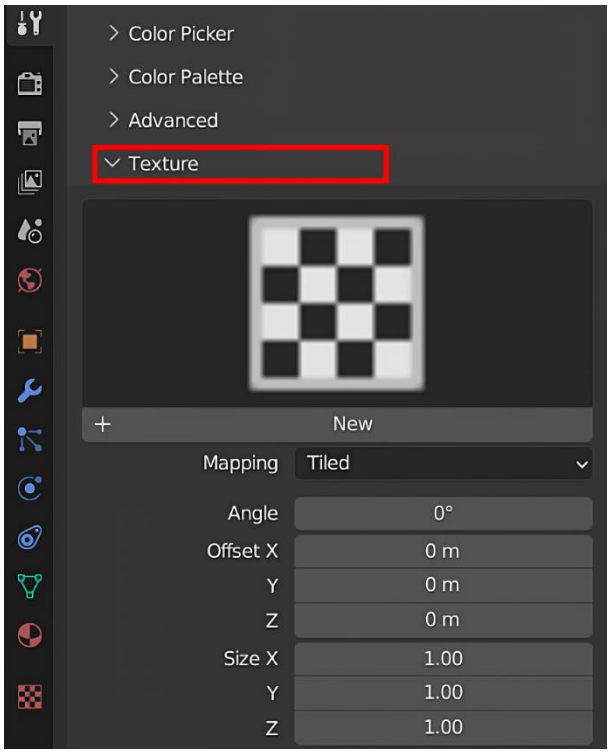
Mix Shader
Shader
Fac
0.500
Shader
Shader
Material Output
All
Surface
Volume
Displacement

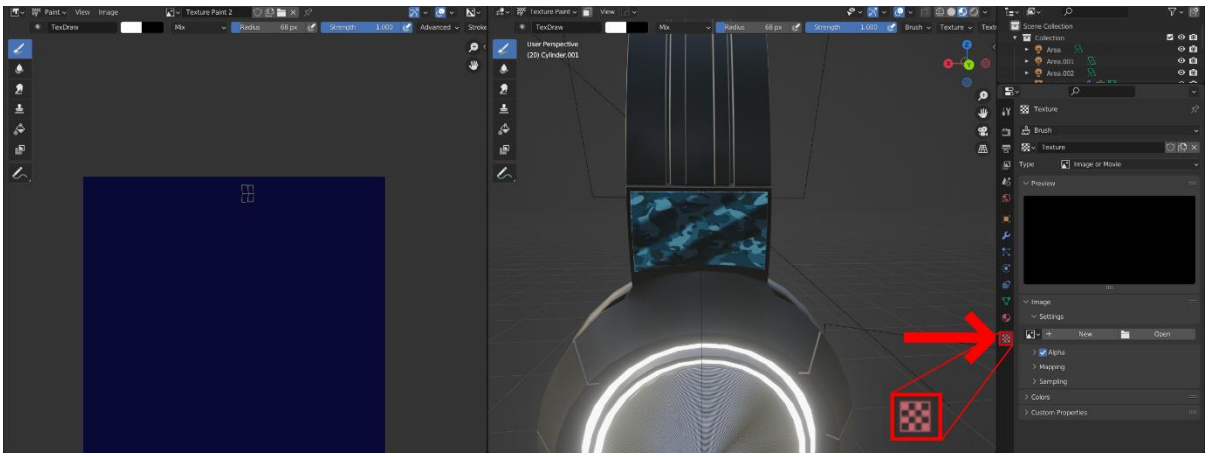

Mix shader factor
Color
Alpha
Mix shader factor
Linear
Flat
Repeat
Single Image
Color Space
sRGB
Alpha
Straight
Vector
Mix Shader
Shader
Fac
Shader
Shader

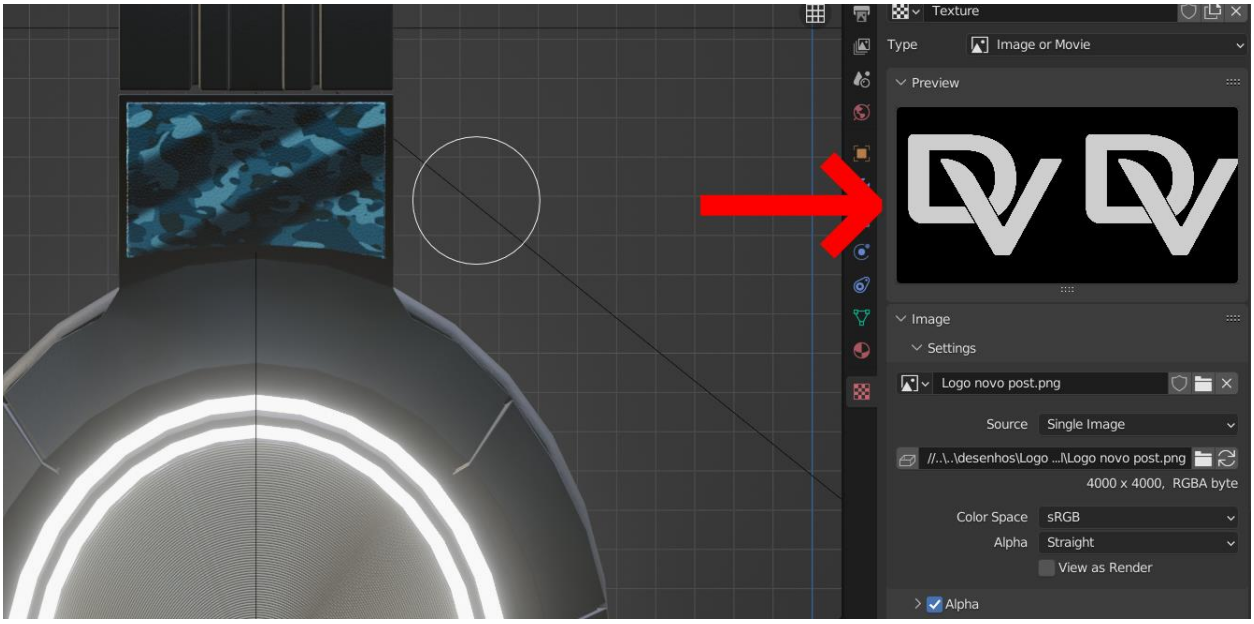


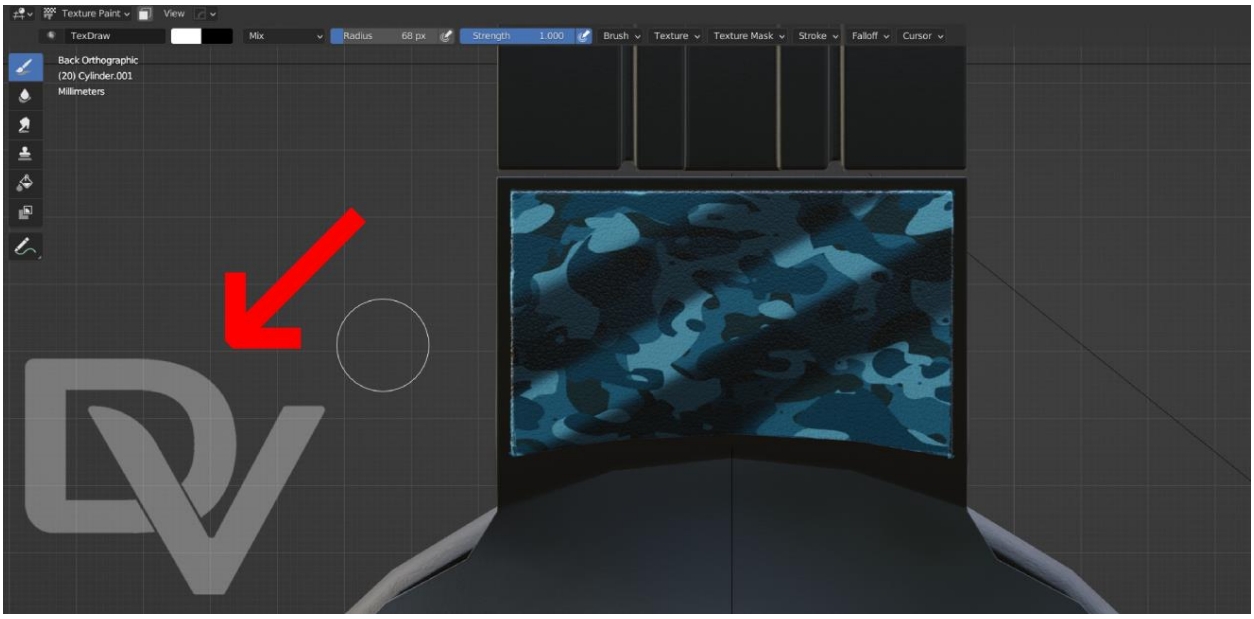

Stencil
Color
Alpha
Stencil
Linear
Flat
Repeat
Generated
Color Space
sRGB
Vector
Mix Shader
Shader
Fac
Shader
Shader
Mix Shader
Shader
Fac
Shader
Shader
Material Output
All
Surface
Volume
Displacement
Principled BSDF
BSDF
GGX
Random Walk

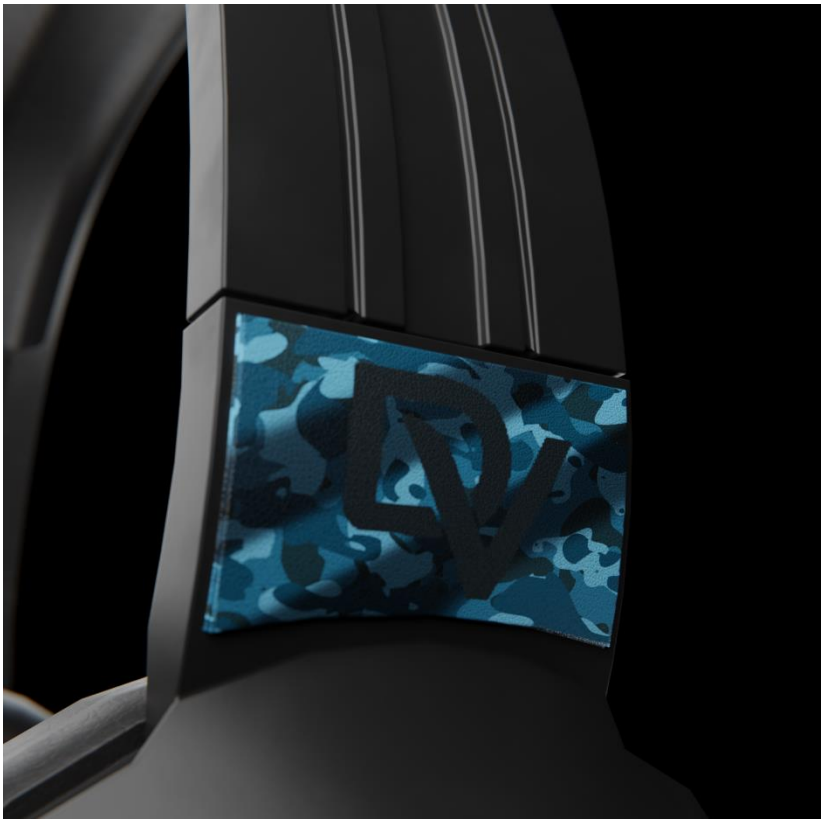


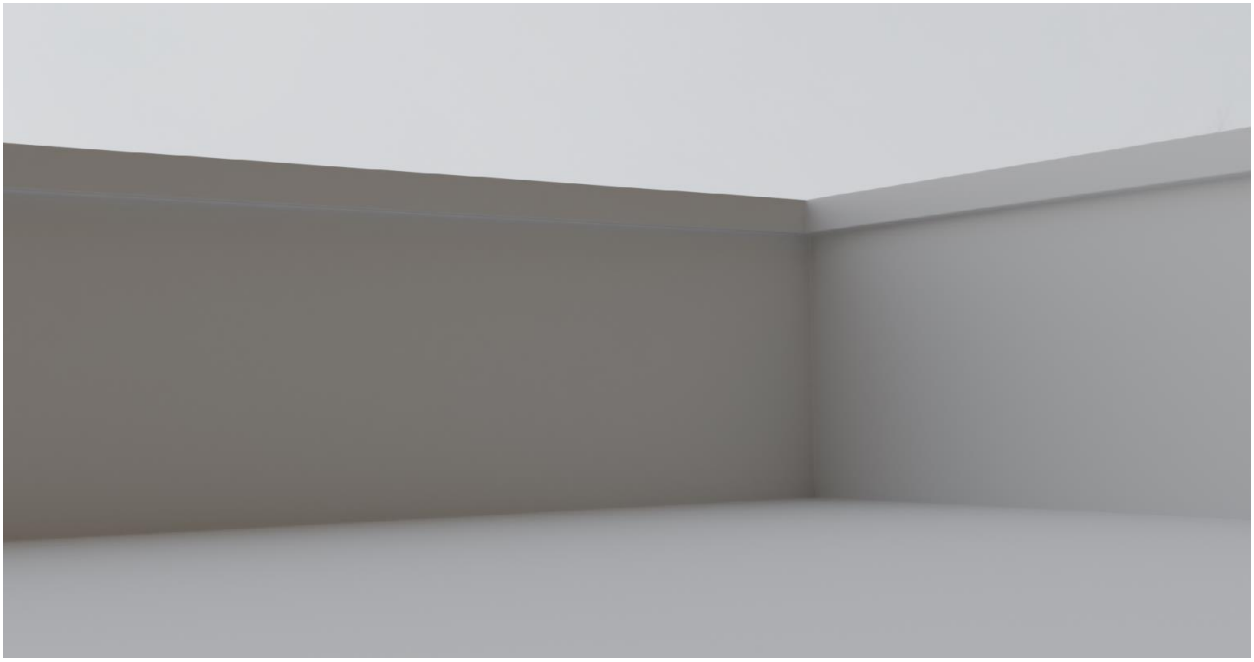

Color Picker
Color Palette
Advanced
Texture
New
Mapping
Tiled
Angle
0°
Offset X
0 m
Y
0 m
Z
0 m
Size X
1.00
Y
1.00
Z
1.00

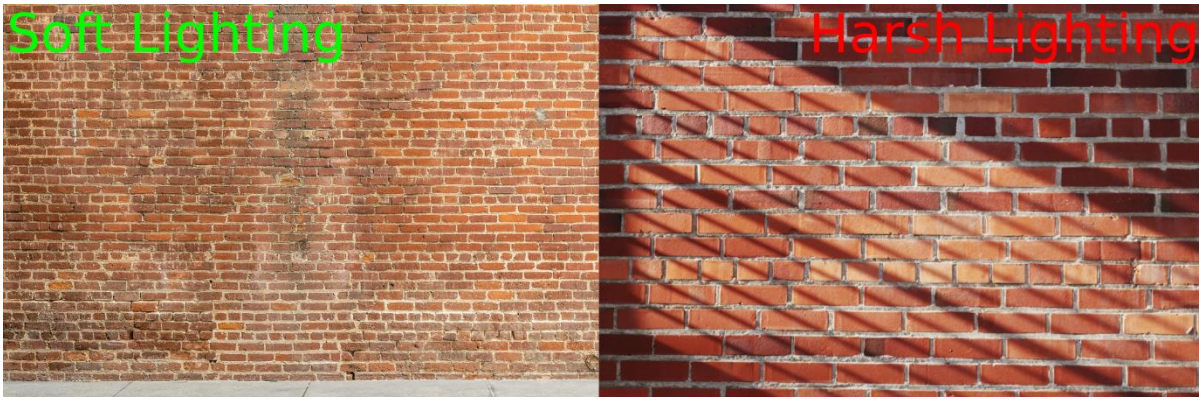


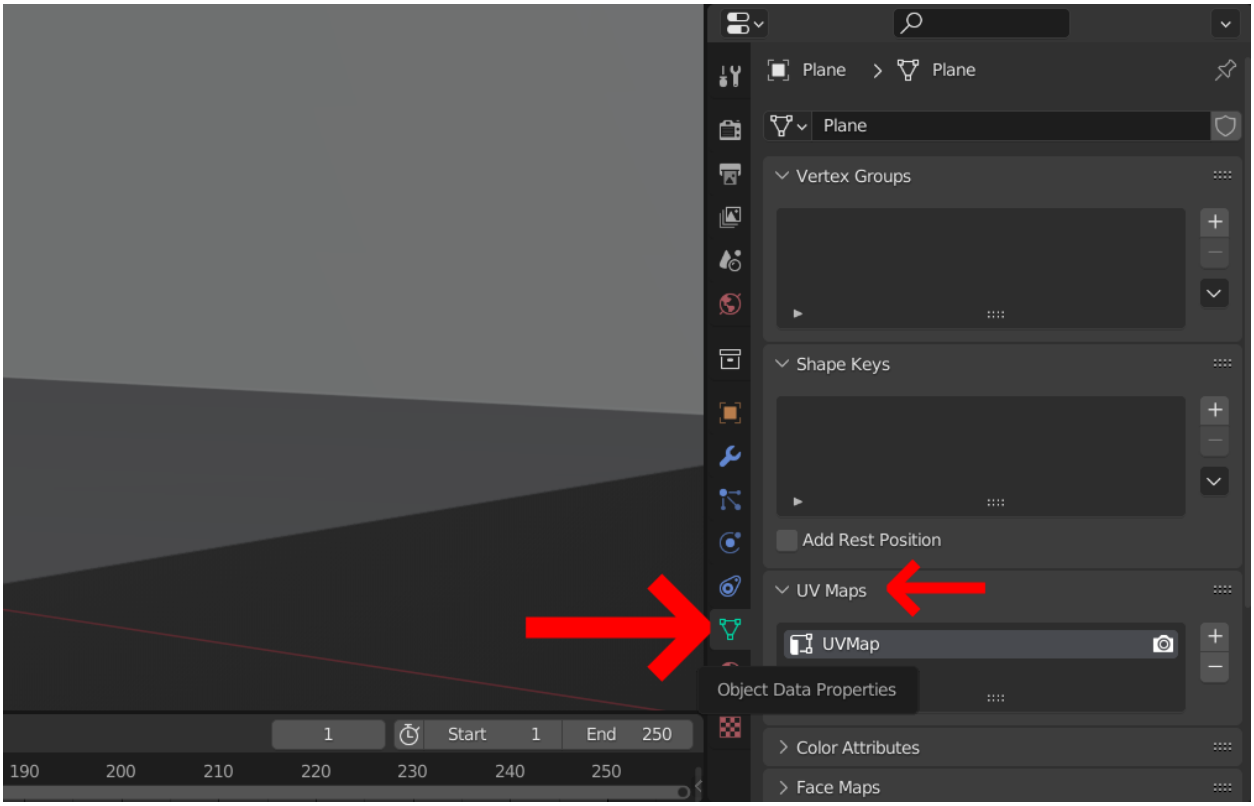

Texture
Type
Image or Movie
Preview
Image
Settings
Logo novo post.png
Source
Single Image
//..\..\desenhos\Logo ...l\Logo novo post.png
4000 x 4000, RGBA byte
Color Space
sRGB
Alpha
Straight
View as Render
Alpha

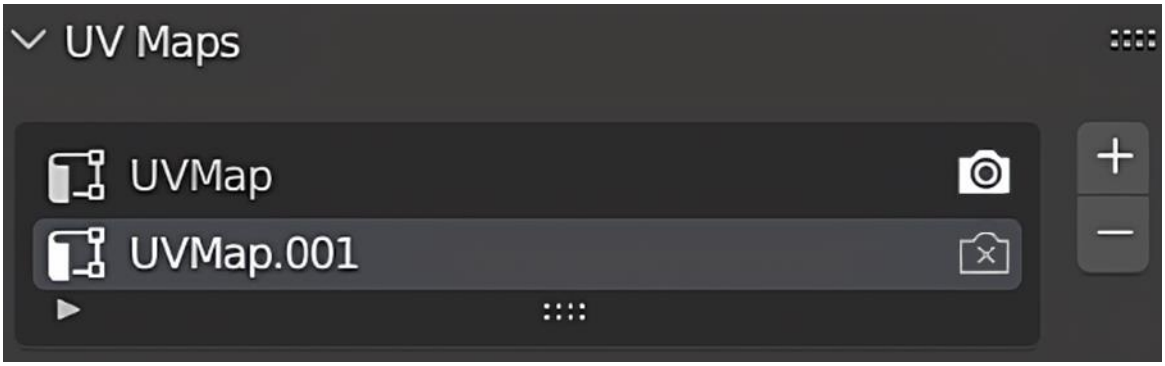

Texture Paint
View
TexDraw
Mix
Radius
68 px
Strength
1.000
Brush
Texture
Texture Mask
Stroke
Falloff
Cursor
Back Orthographic
(20) Cylinder.001
Millimeters

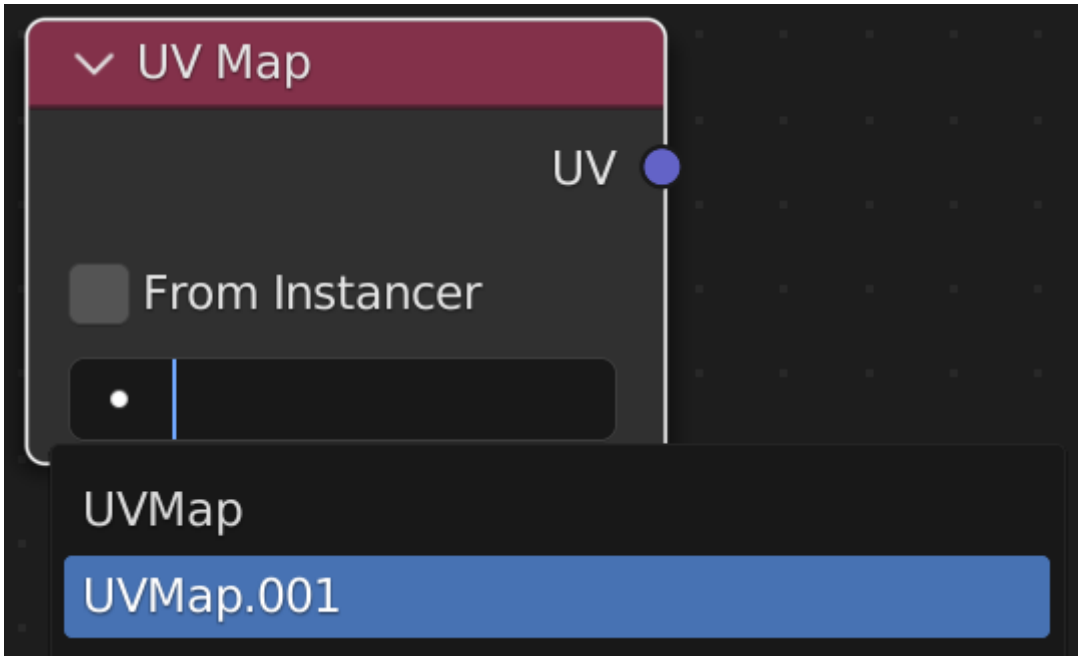


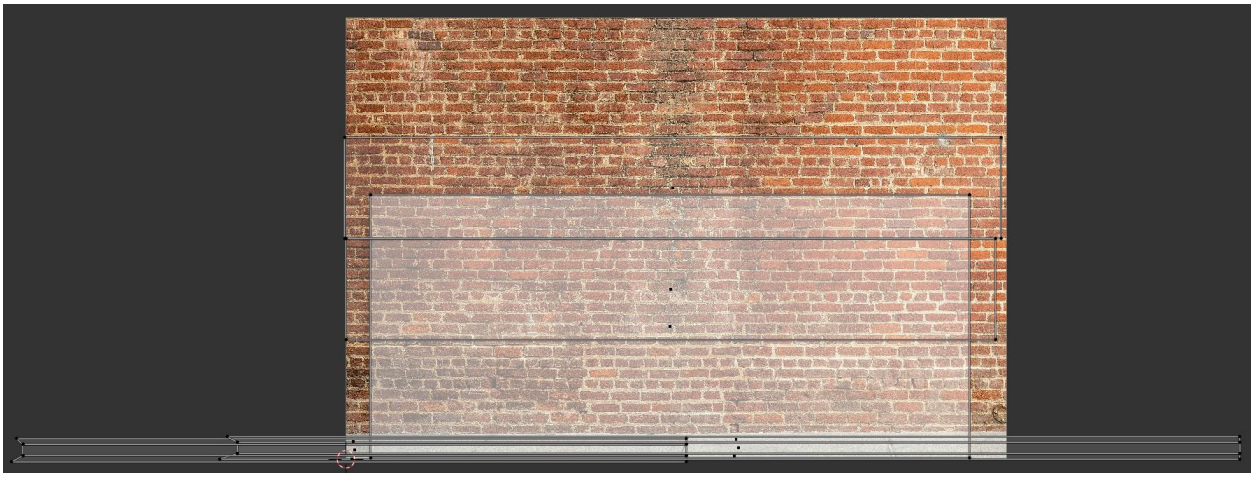


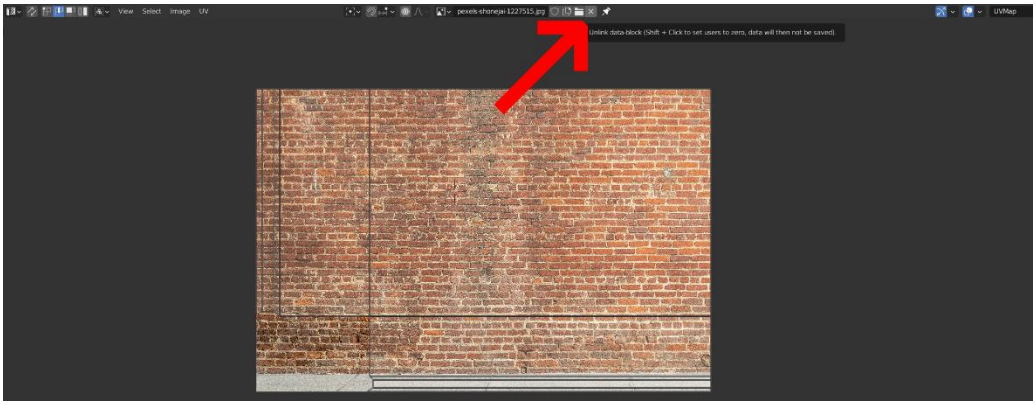

Soft Lighting
Harsh Lighting

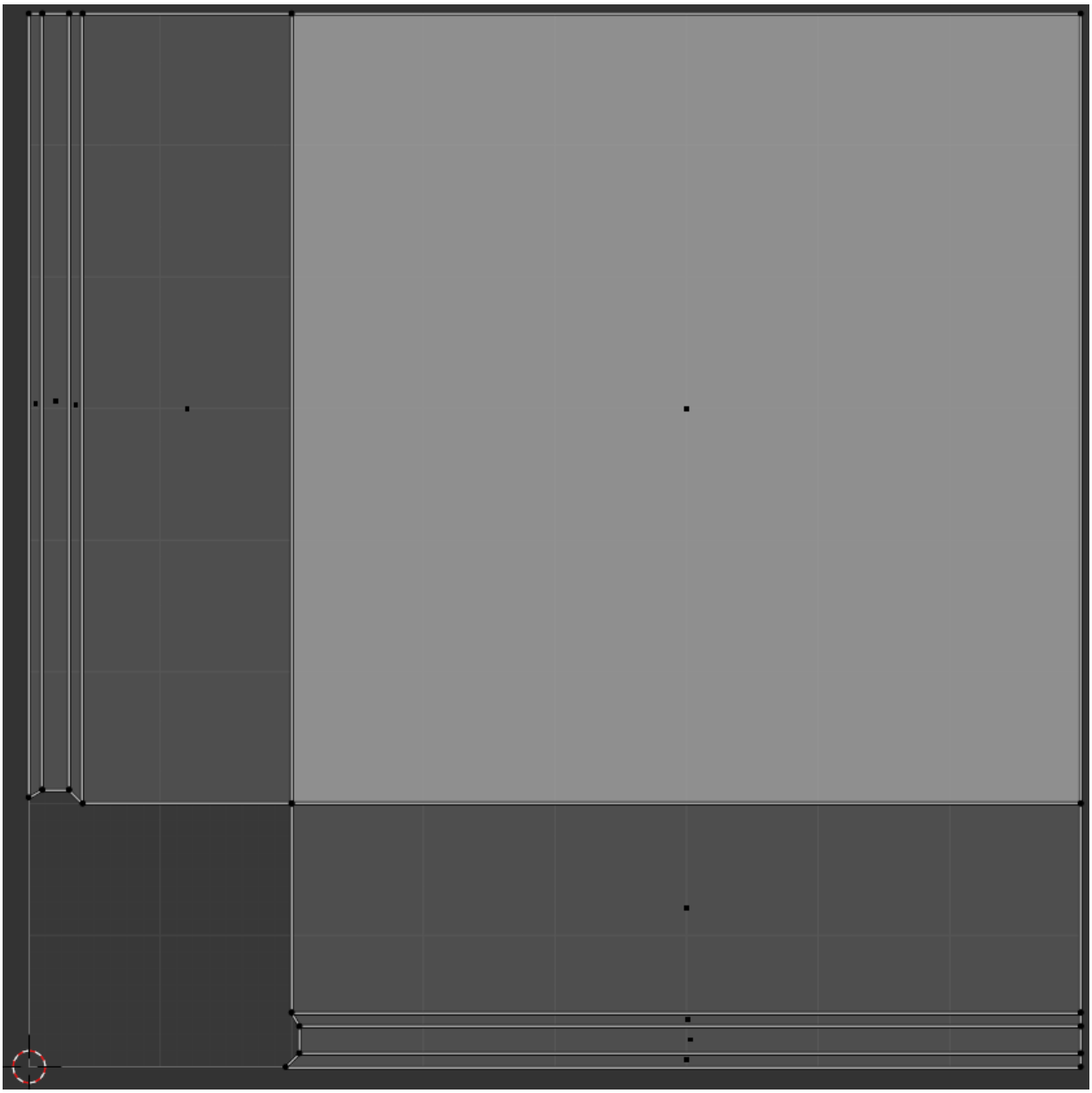

Plane
Plane
Plane
Vertex Groups
Shape Keys
Add Rest Position
UV Maps
UVMap
Object Data Properties
Color Attributes
Face Maps
1
Start
1
End
250
190
200
210
220
230
240
250

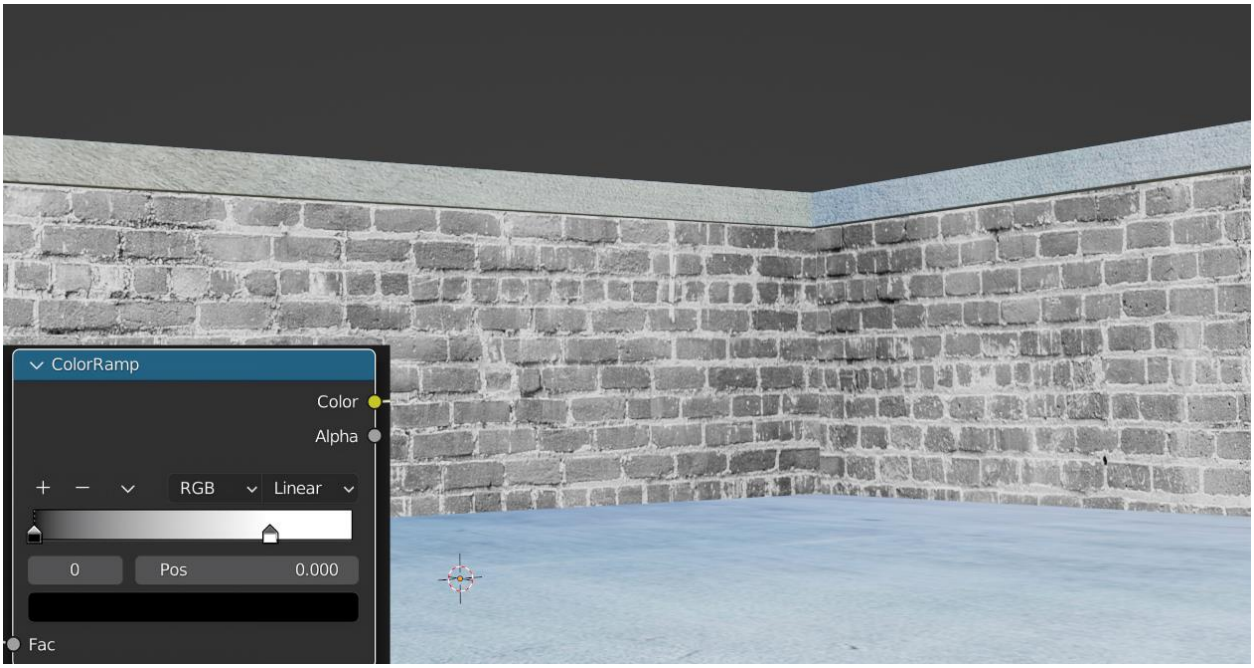

UV Maps
UVMap
UVMap.001

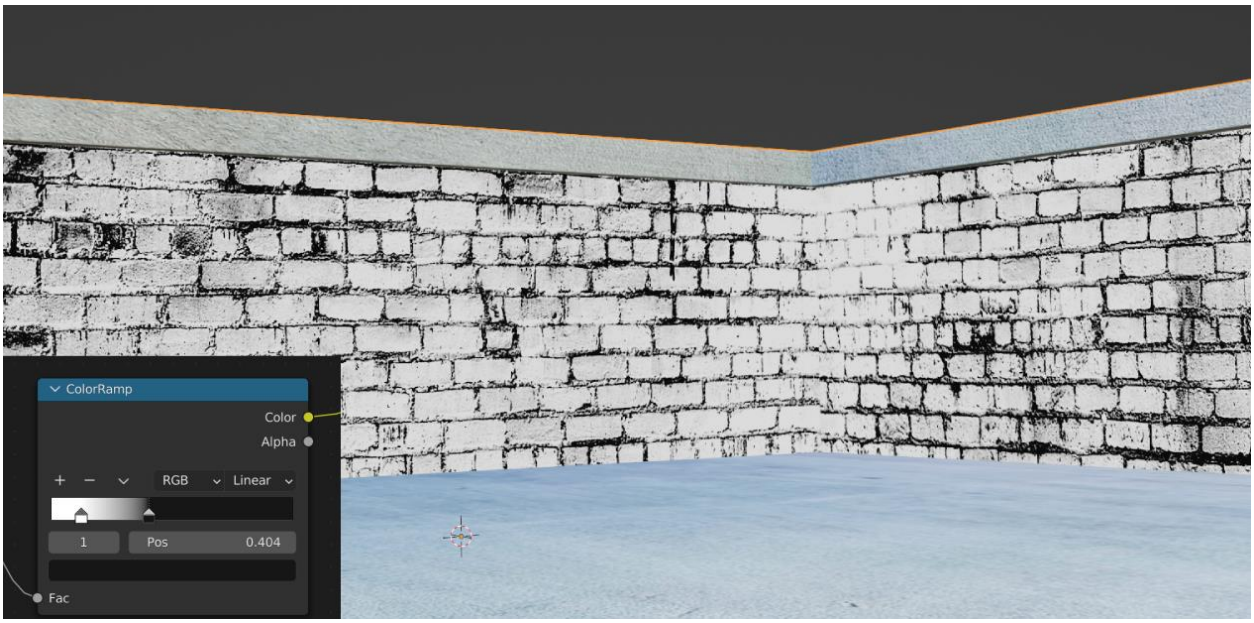

UV Map
UV
From Instancer
UVMap
UVMap.001

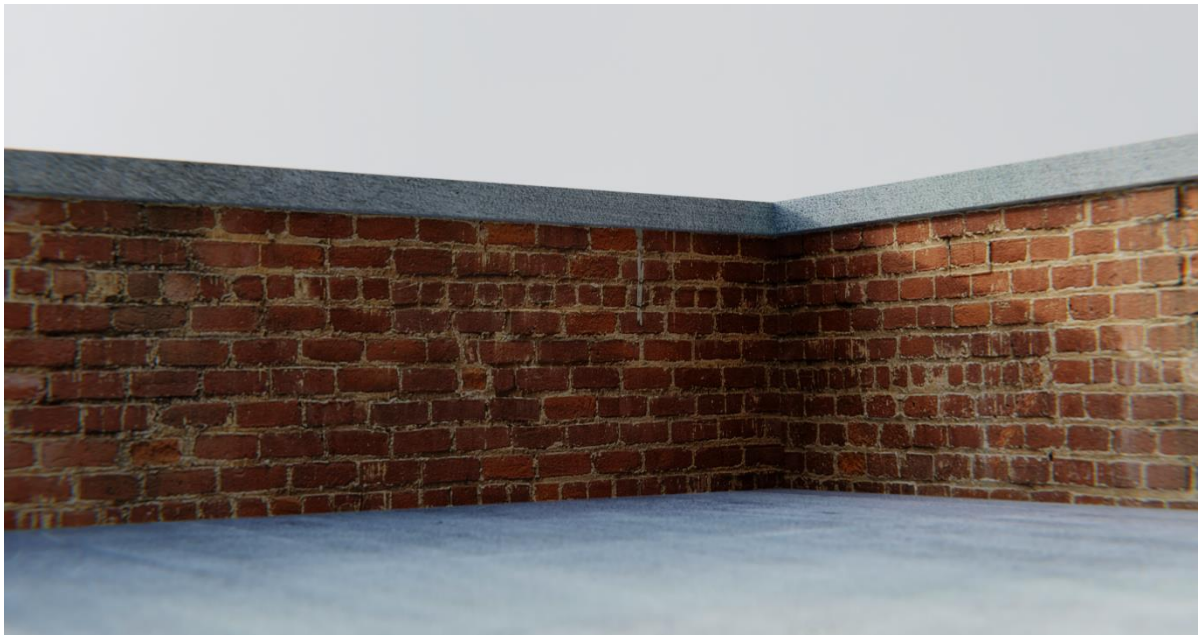



View
Select
Image
UV
pexels-shoneji-1227515.jpg
Unlink data-block (Shift + Click to set users to zero, data will then not be saved)
UVMap

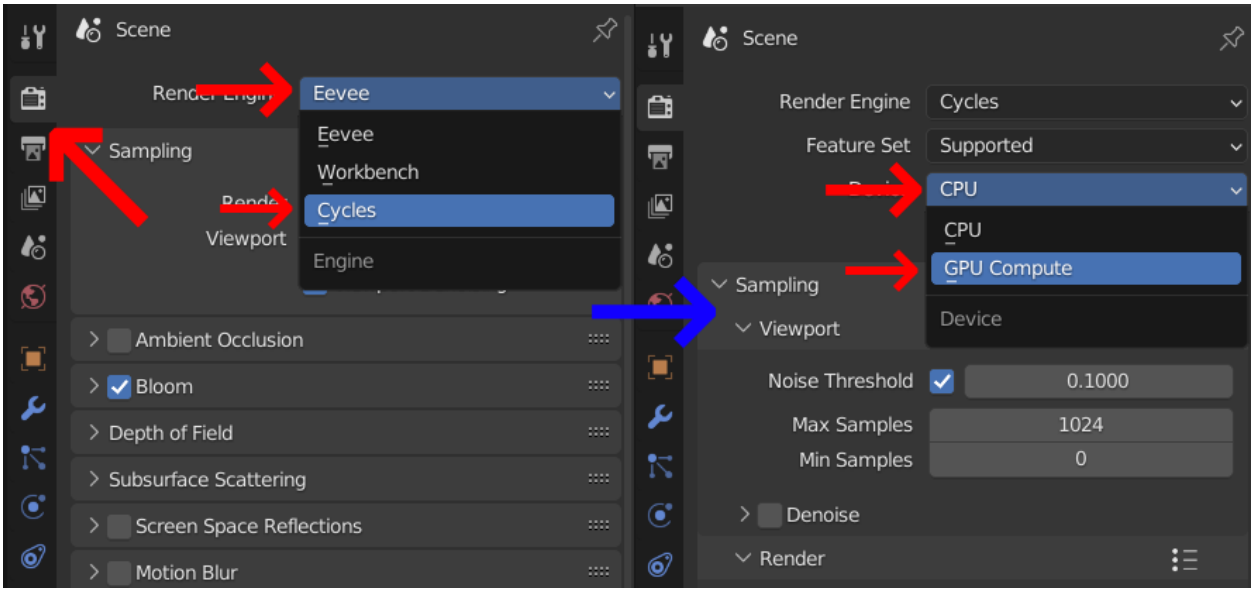


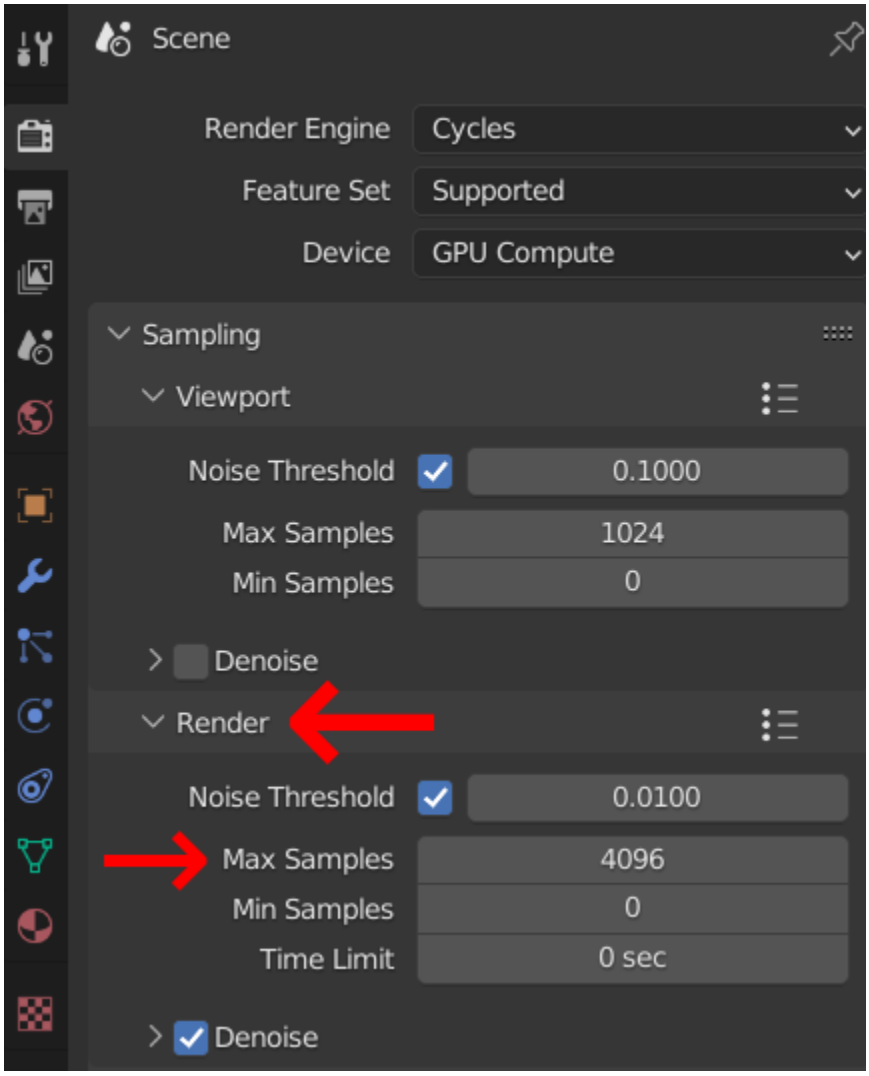

ColorRamp
Color
Alpha
RGB
Linear
0
Pos
0.000
Fac


ColorRamp
Color
Alpha
RGB
Linear
1
Pos
0.404
Fac



Color
Color+roughness+normal+extrusions


Scene
Eevee
Eevee
Workbench
Cycles
Engine
Sampling
Viewport
Ambient Occlusion
Bloom
Depth of Field
Subsurface Scattering
Screen Space Reflections
Motion Blur
Scene
Render Engine
Cycles
Feature Set
Supported
CPU
CPU
GPU Compute
Device
Sampling
Viewport
Noise Threshold
0.1000
Max Samples
1024
Min Samples
0
Denoise
Render


Scene
Render Engine
Cycles
Feature Set
Supported
Device
GPU Compute
Sampling
Viewport
Noise Threshold
0.1000
Max Samples
1024
Min Samples
0
Denoise
Render
Noise Threshold
0.0100
Max Samples
4096
Min Samples
0
Time Limit
0 sec
Denoise

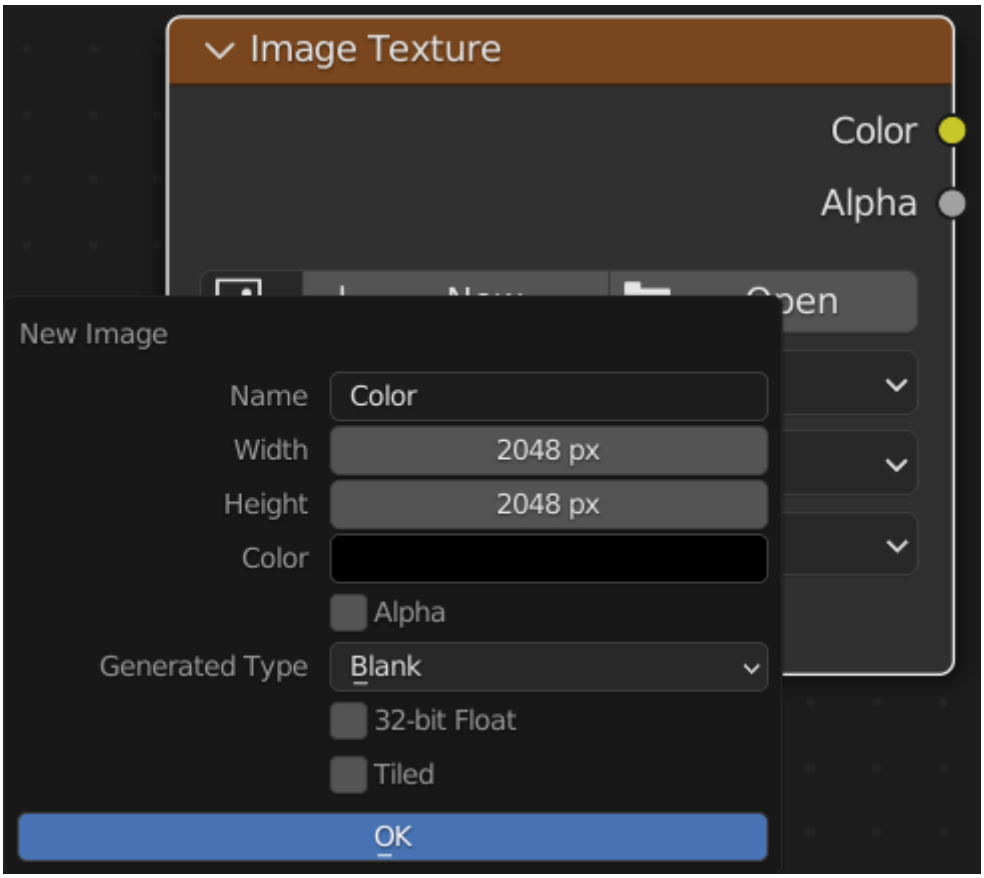
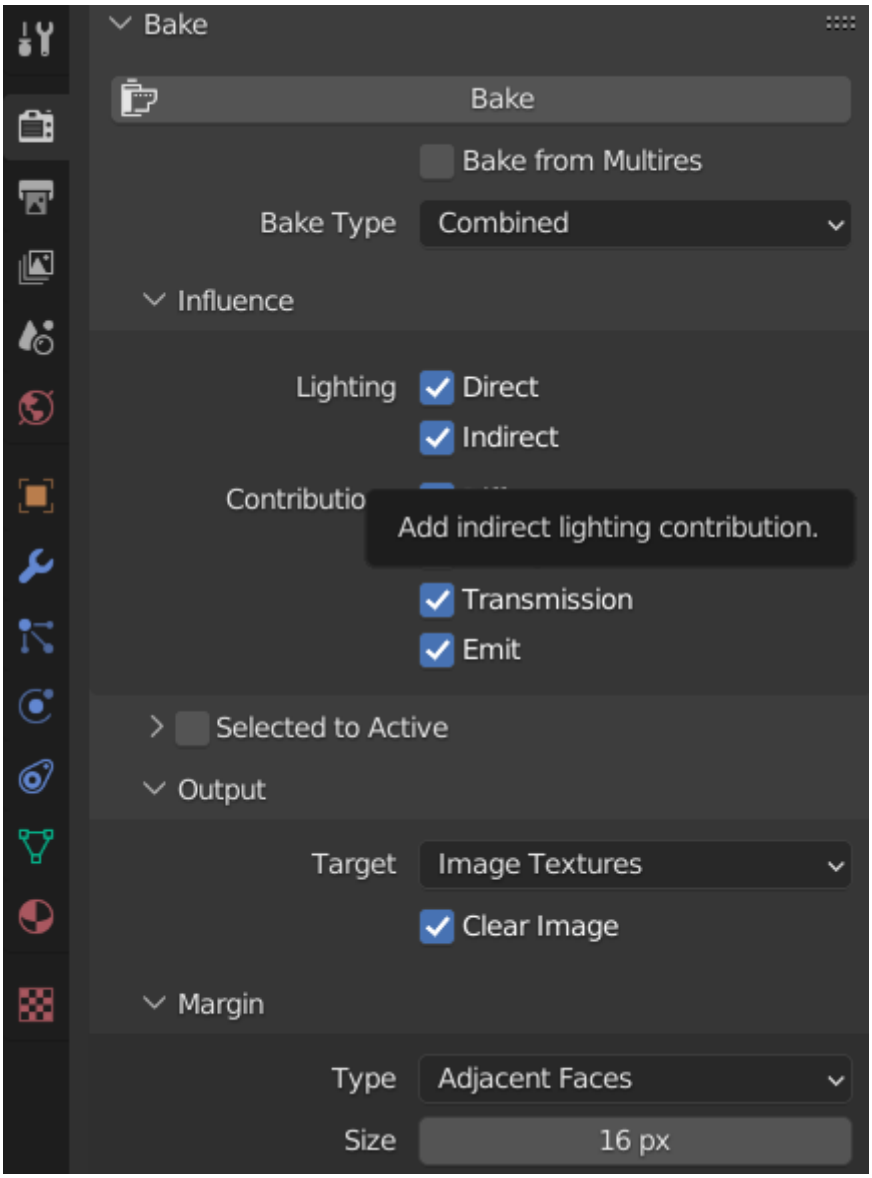
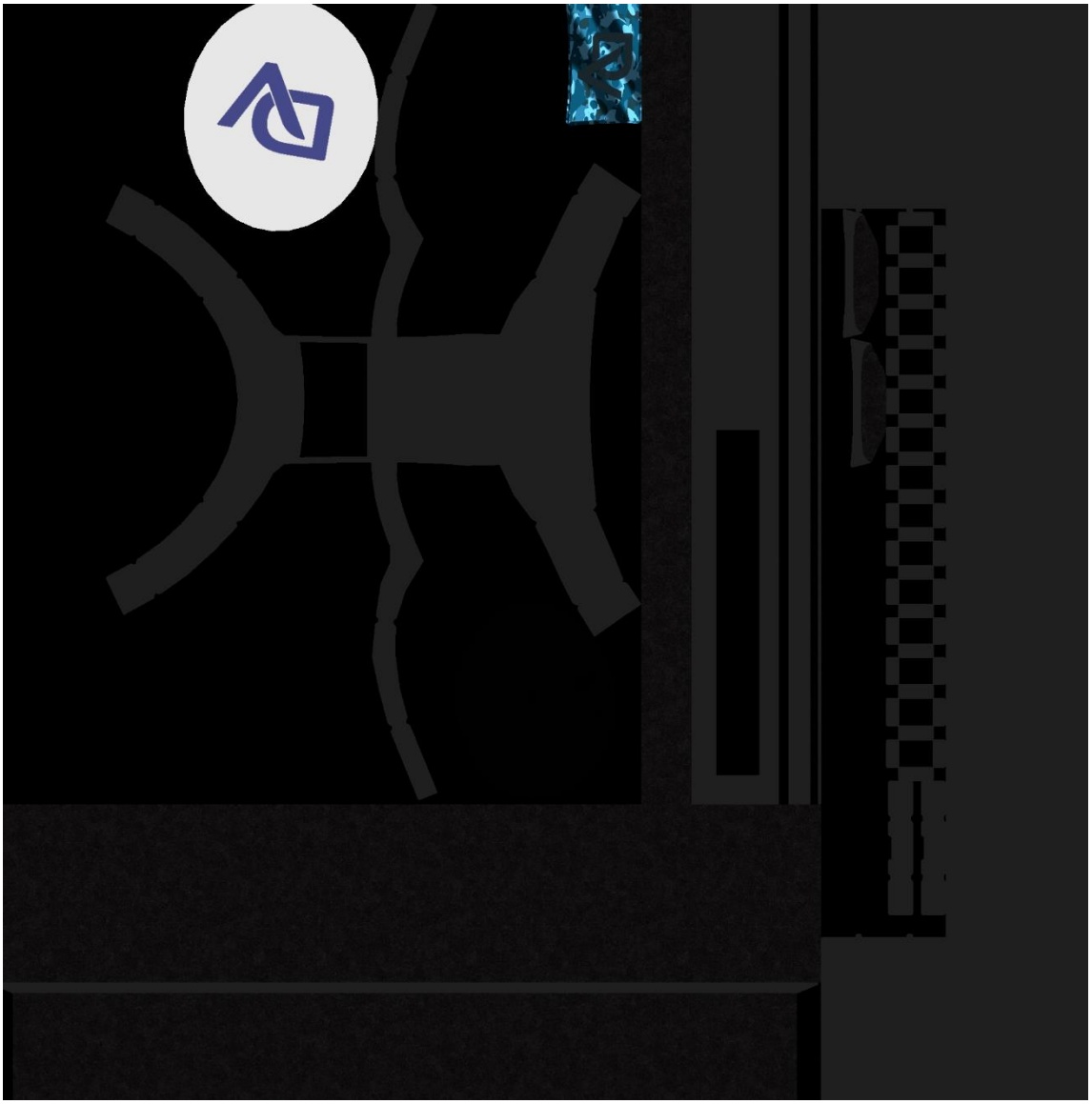
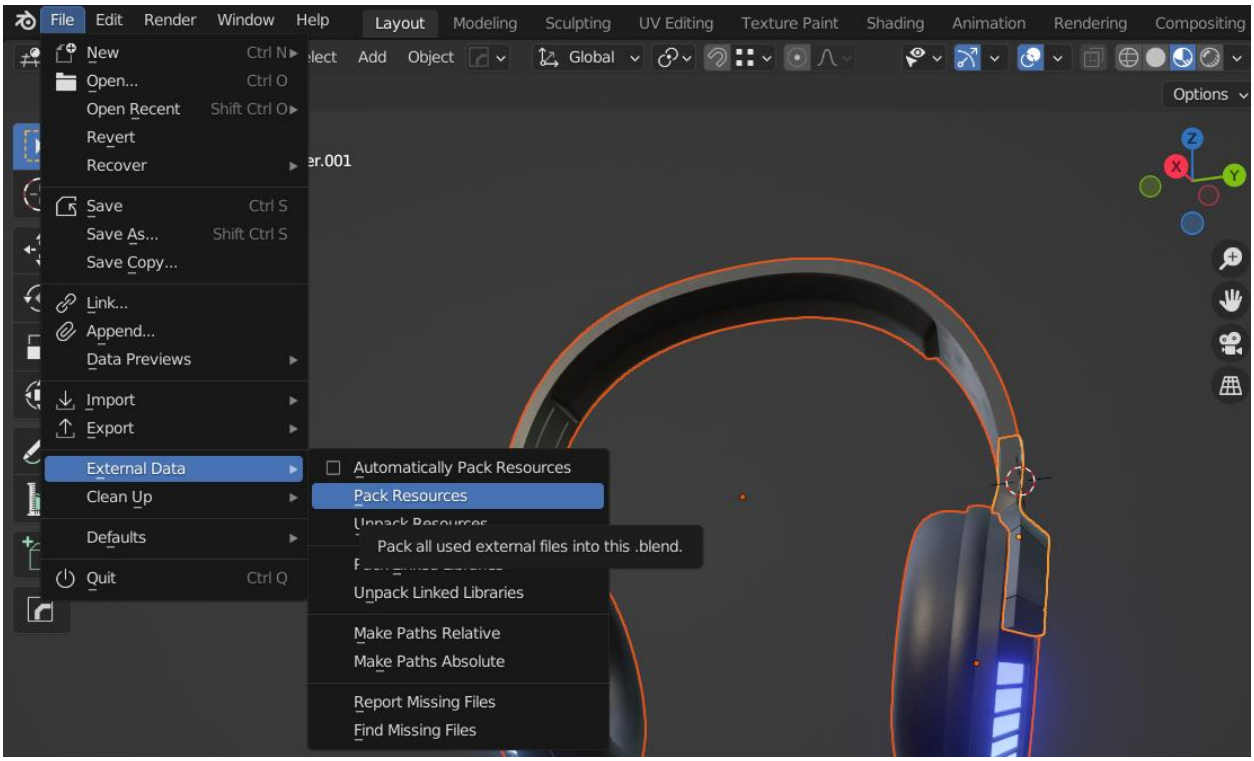
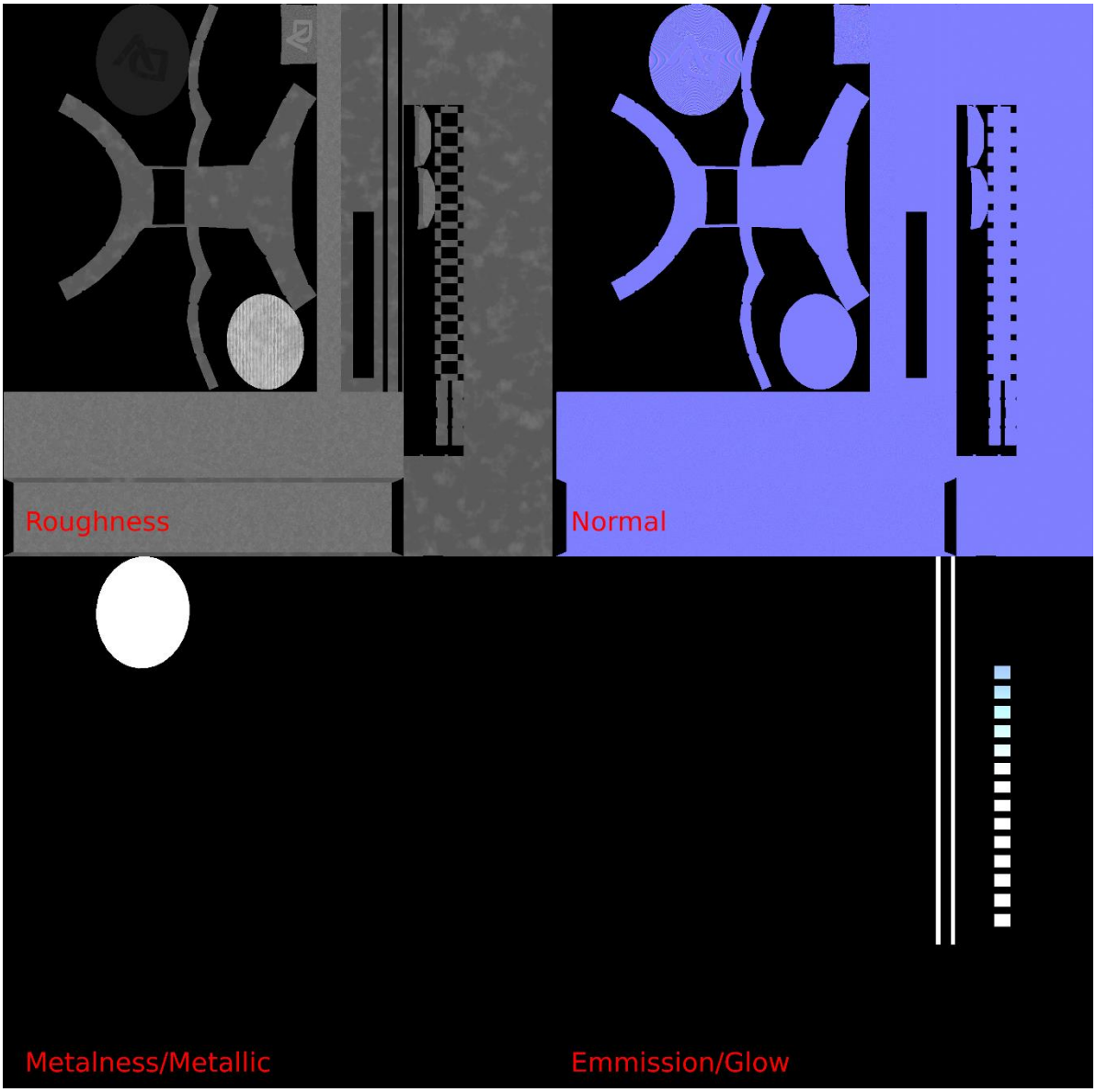


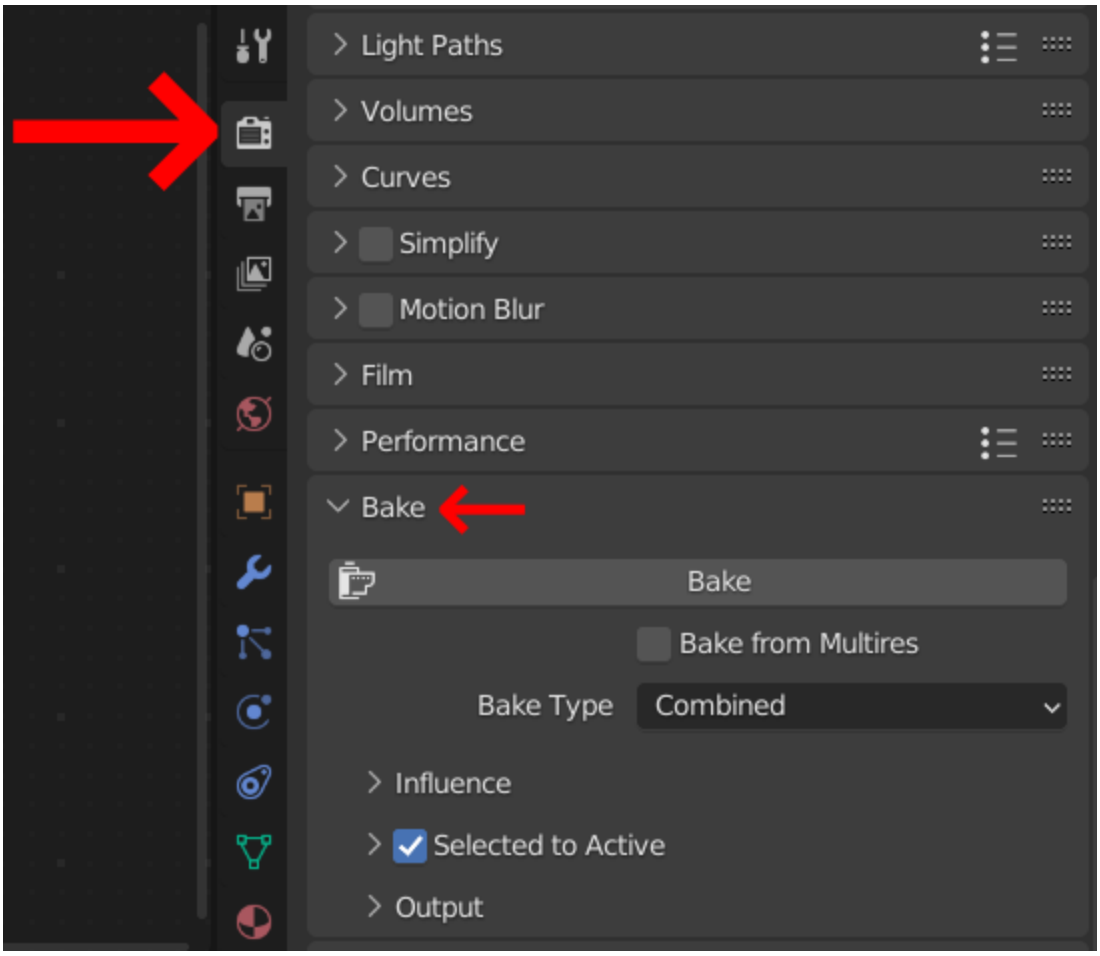
Image Texture
Color
Alpha
New Image
Name
Color
Width
2048 px
Height
2048 px
Color
Alpha
Generated Type
Blank
32-bit Float
Tiled
OK


Bake
Bake
Bake from Multires
Bake Type
Combined
Influence
Lighting
Direct
Indirect
Contributio
Add indirect lighting contribution.
Transmission
Emit
Selected to Active
Output
Target
Image Textures
Clear Image
Margin
Type
Adjacent Faces
Size
16 px




File
Edit
Render
Window
Help
Layout
Modeling
Sculpting
UV Editing
Texture Paint
Shading
Animation
Rendering
Compositing
New Ctrl N
Open... Ctrl O
Open Recent Shift Ctrl O
Revert
Recover
Save Ctrl S
Save As... Shift Ctrl S
Save Copy...
Link...
Append...
Data Previews
Import
Export
External Data
Clean Up
Defaults
Quit Ctrl Q
Add
Object
Global
Options
Automatically Pack Resources
Pack Resources
Pack all used external files into this .blend.
Unpack Linked Libraries
Make Paths Relative
Make Paths Absolute
Report Missing Files
Find Missing Files

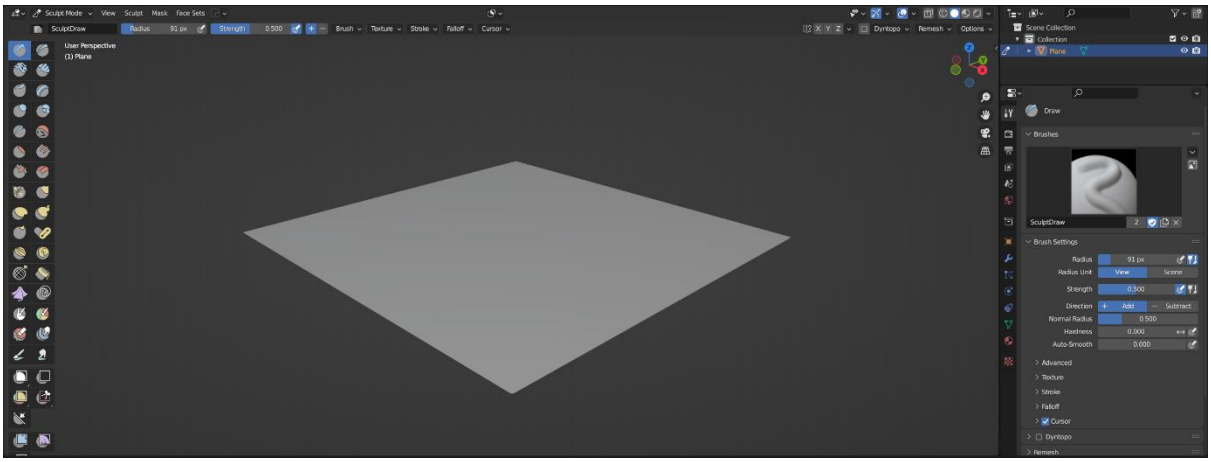

Roughness
Normal
Metalness/Metallic
Emmission/Glow

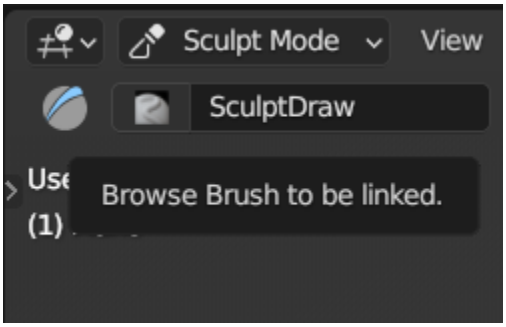

Light Paths
Volumes
Curves
Simplify
Motion Blur
Film
Performance
Bake
Bake
Bake from Multires
Bake Type
Combined
Influence
Selected to Active
Output

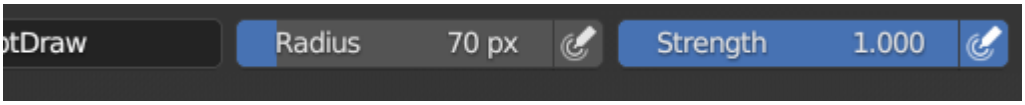
Selected to Active
Cage
Extrusion
0 m
Max Ray Distance
0 m

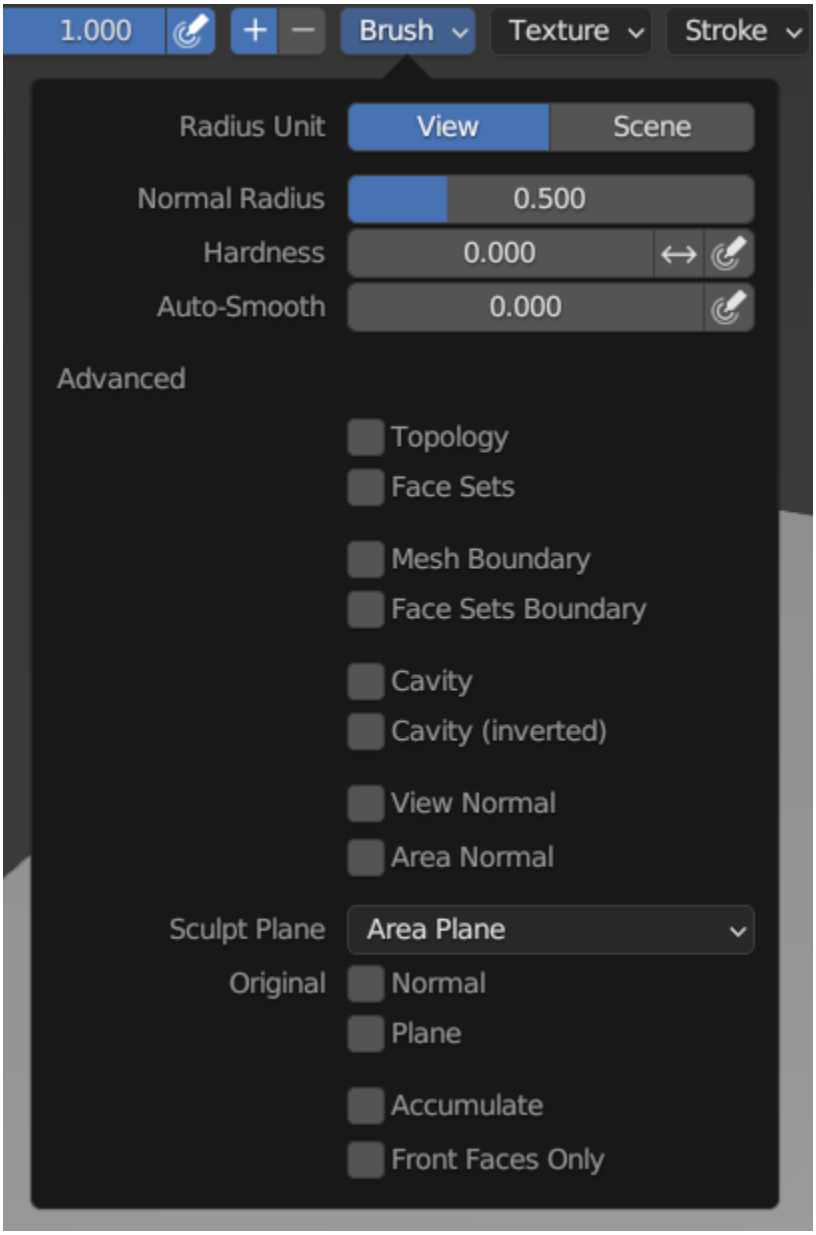
High poly
Low poly

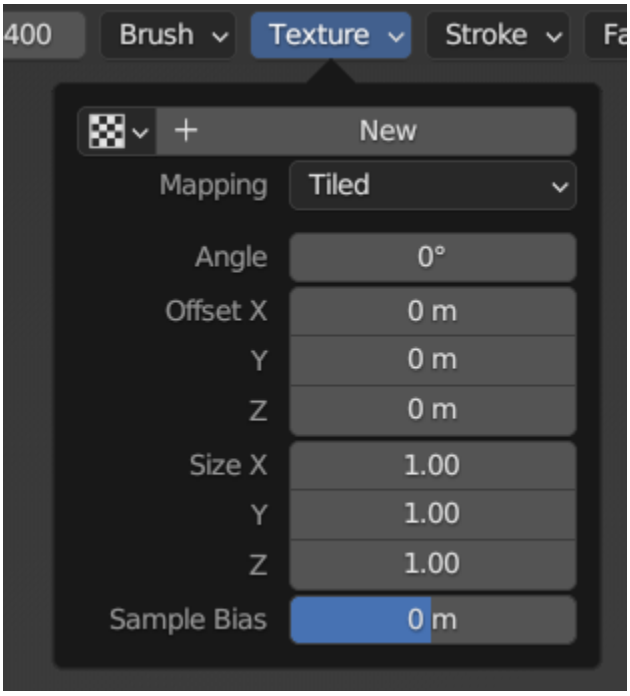
Chapter 6: Introduction to Blender's Sculpting Tools

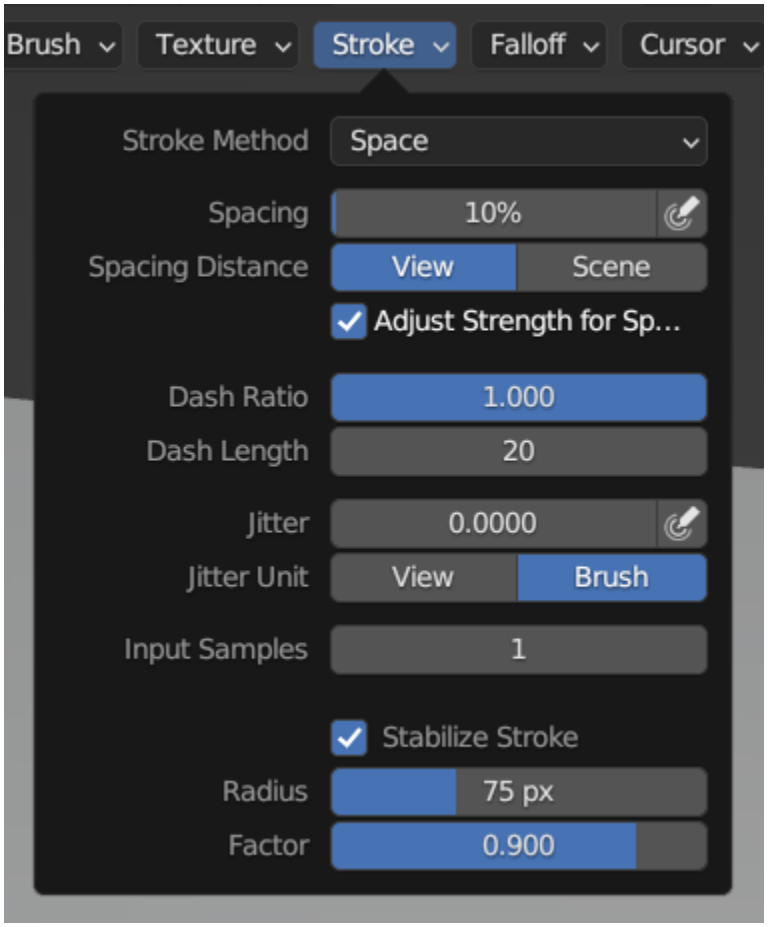


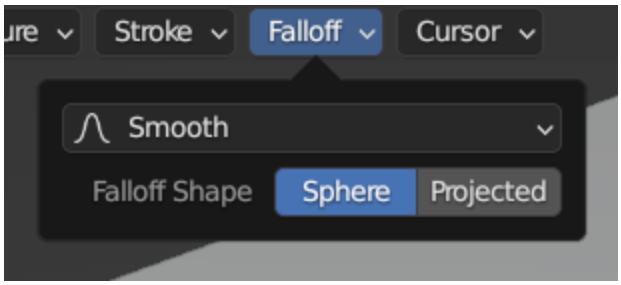


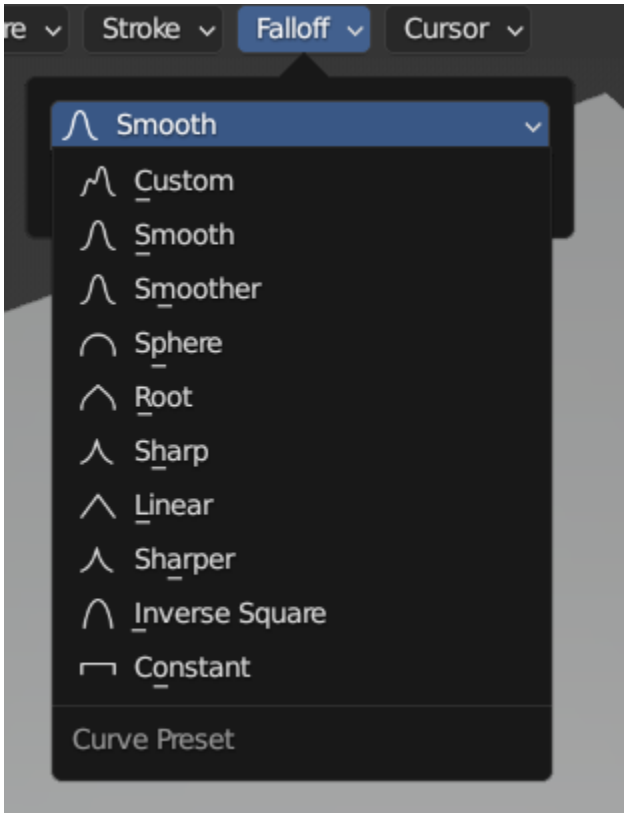


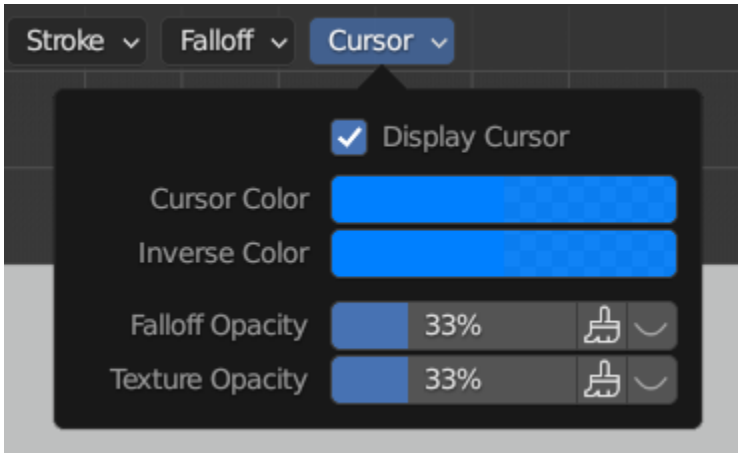

1.000
Brush
Texture
Stroke
Radius Unit
View
Scene
Normal Radius
0.500
Hardness
0.000
Auto-Smooth
0.000
Advanced
Topology
Face Sets
Mesh Boundary
Face Sets Boundary
Cavity
Cavity (inverted)
View Normal
Area Normal
Sculpt Plane
Area Plane
Original
Normal
Plane
Accumulate
Front Faces Only

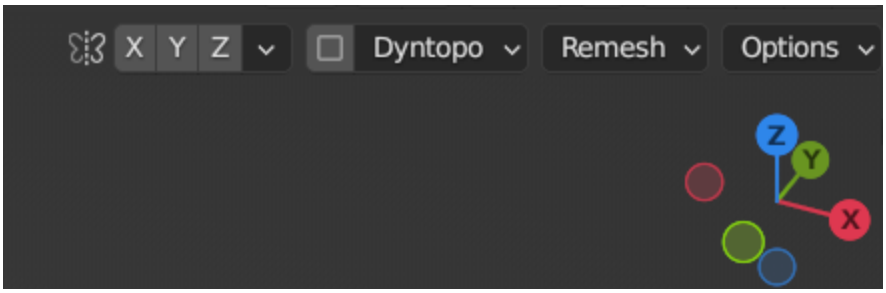

400
Brush
Texture
Stroke
Fa
New
Mapping
Tiled
Angle
0°
Offset X
0 m
Y
0 m
Z
0 m
Size X
1.00
Y
1.00
Z
1.00
Sample Bias
0 m

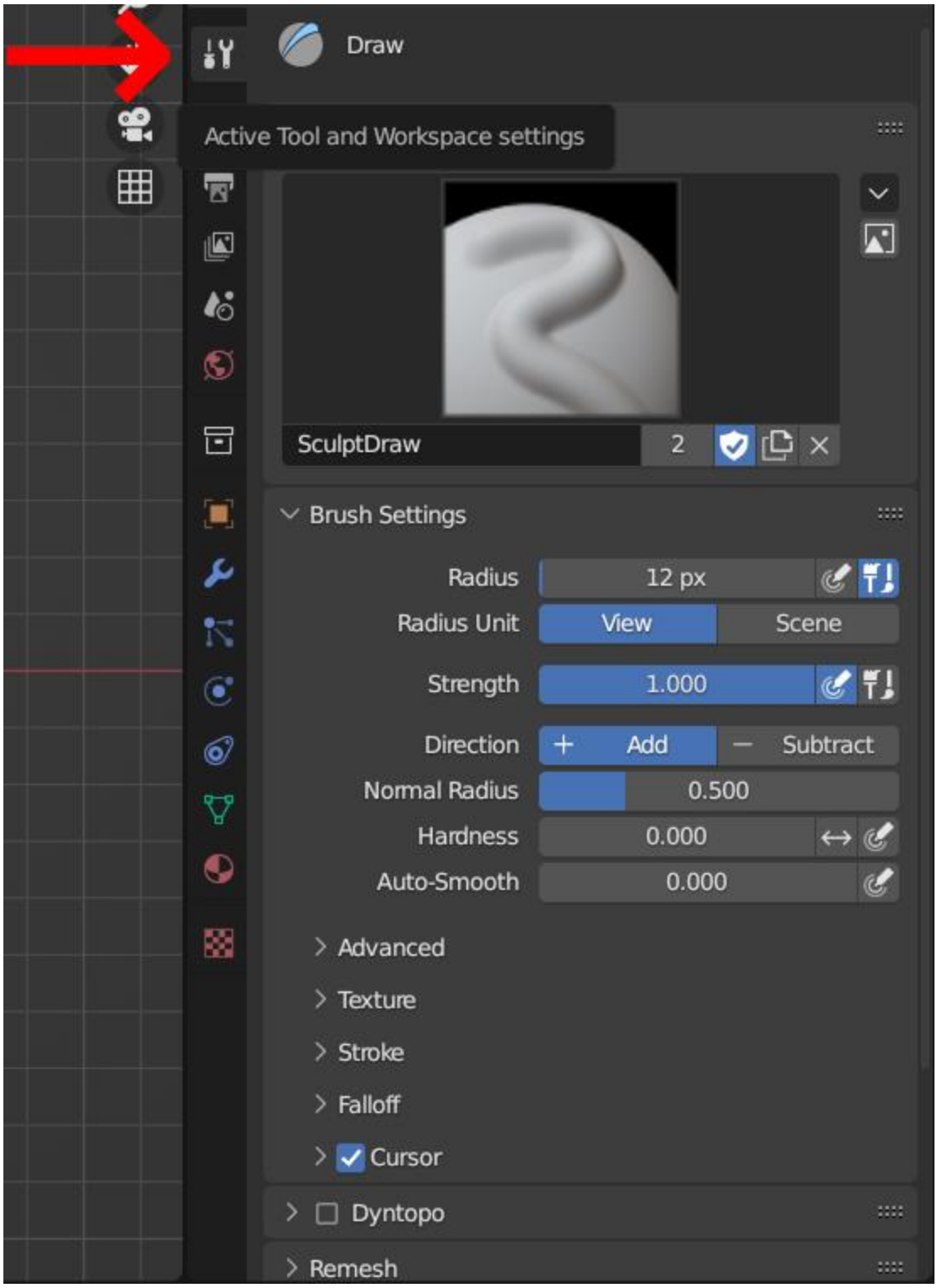

Brush
Texture
Stroke
Falloff
Cursor
Stroke Method
Space
Spacing
10%
Spacing Distance
View
Scene
Adjust Strength for Sp...
Dash Ratio
1.000
Dash Length
20
Jitter
0.0000
Jitter Unit
View
Brush
Input Samples
1
Stabilize Stroke
Radius
75 px
Factor
0.900

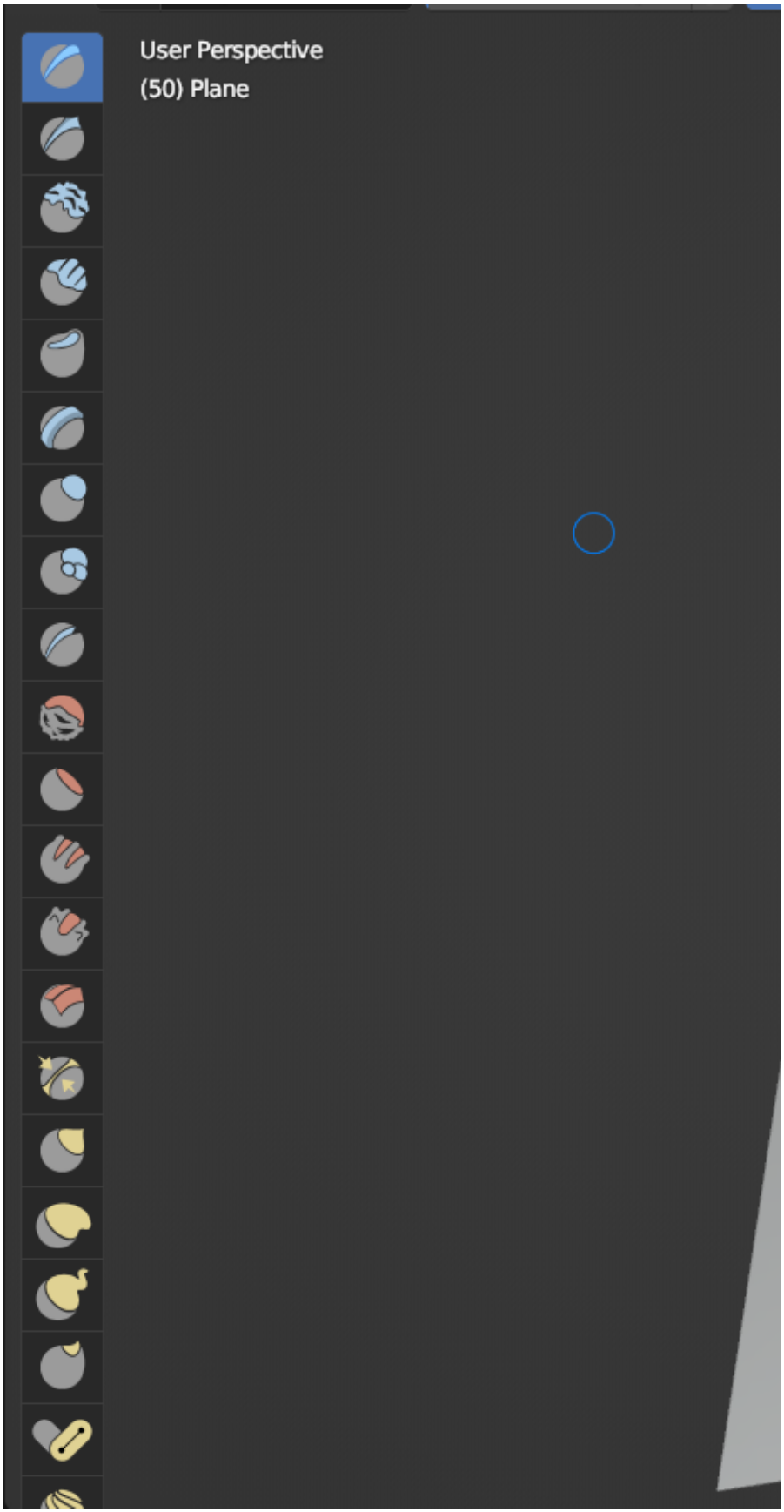

Stroke
Falloff
Cursor
Smooth
Falloff Shape
Sphere
Projected

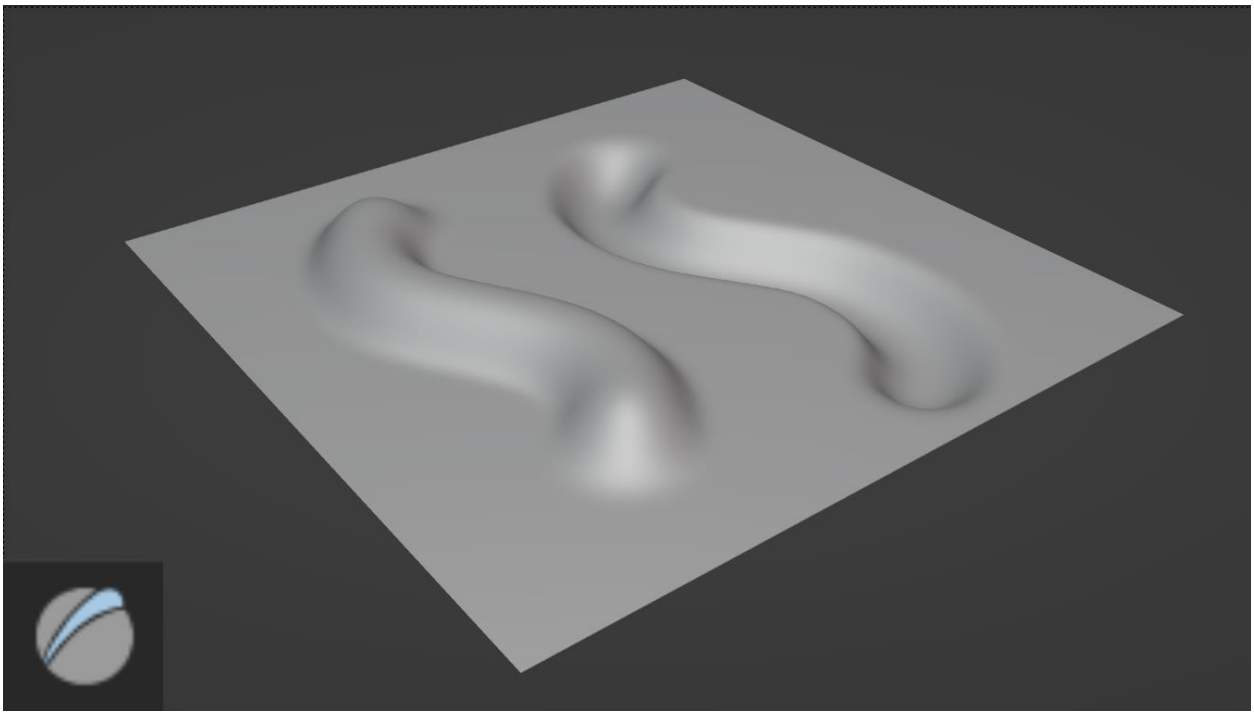

Stroke
Falloff
Cursor
Smooth
Custom
Smooth
Smoother
Sphere
Root
Sharp
Linear
Sharper
Inverse Square
Constant
Curve Preset

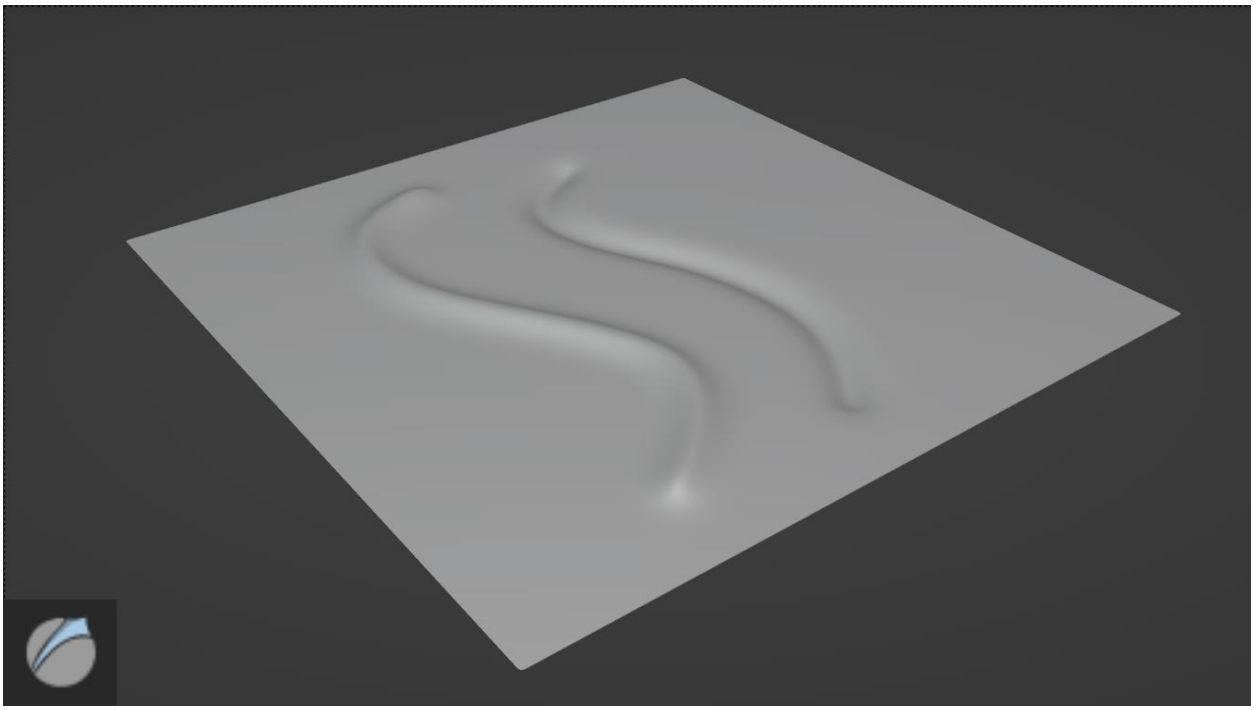

Stroke
Falloff
Cursor
Display Cursor
Cursor Color
Inverse Color
Falloff Opacity
33%
Texture Opacity
33%

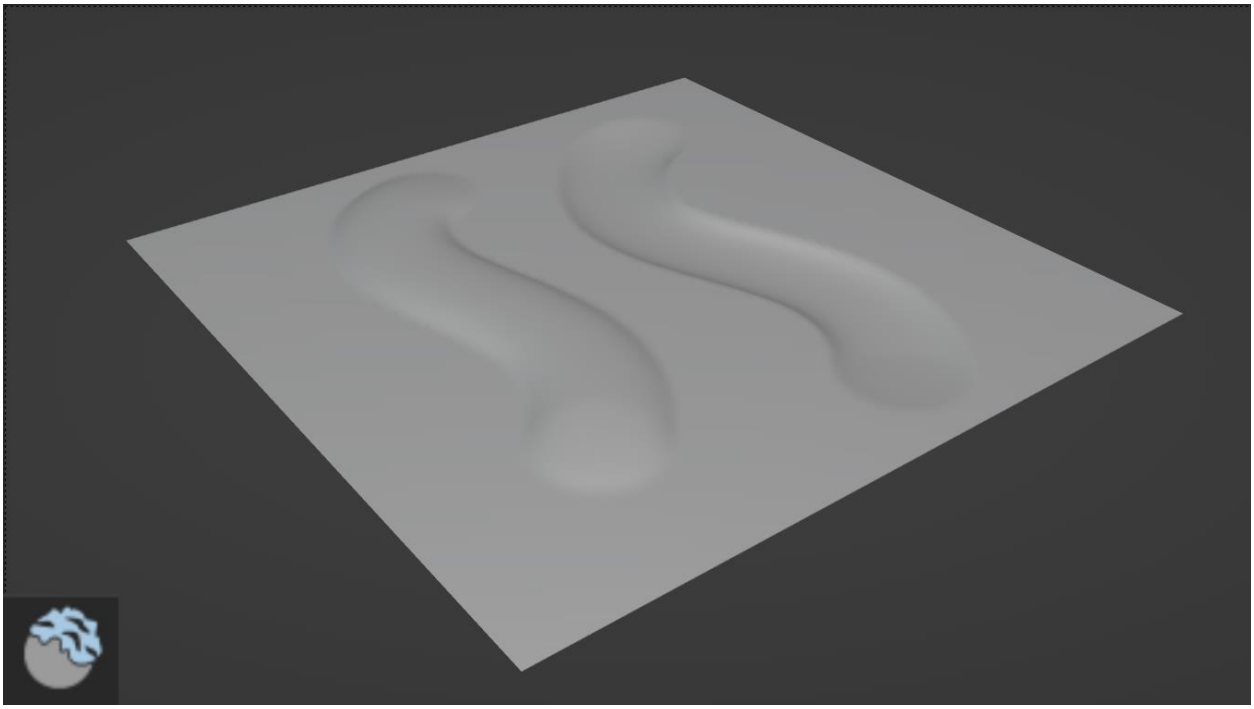

X
Y
Z
Dyntopo
Remesh
Options
Z
Y
X

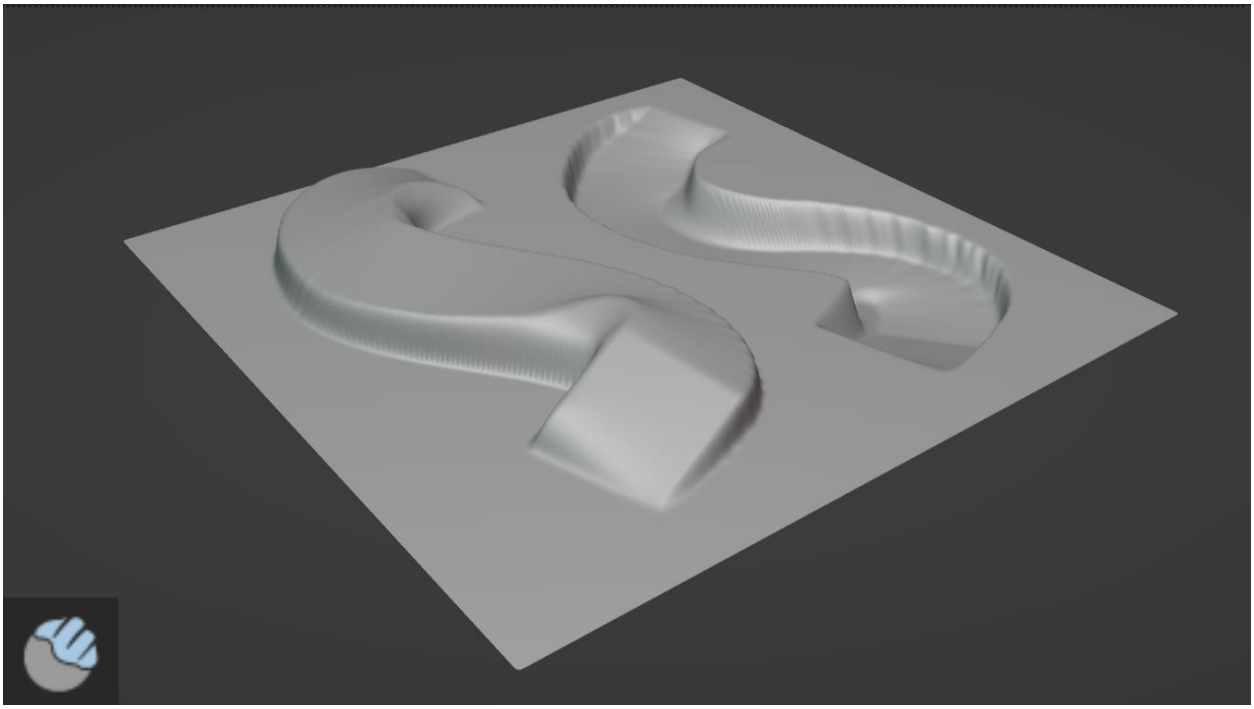

Draw
Active Tool and Workspace settings
SculptDraw
2
Brush Settings
Radius
12 px
Radius Unit
View
Scene
Strength
1.000
Direction
Add
Subtract
Normal Radius
0.500
Hardness
0.000
Auto-Smooth
0.000
Advanced
Texture
Stroke
Falloff
Cursor
Dyntopo
Remesh

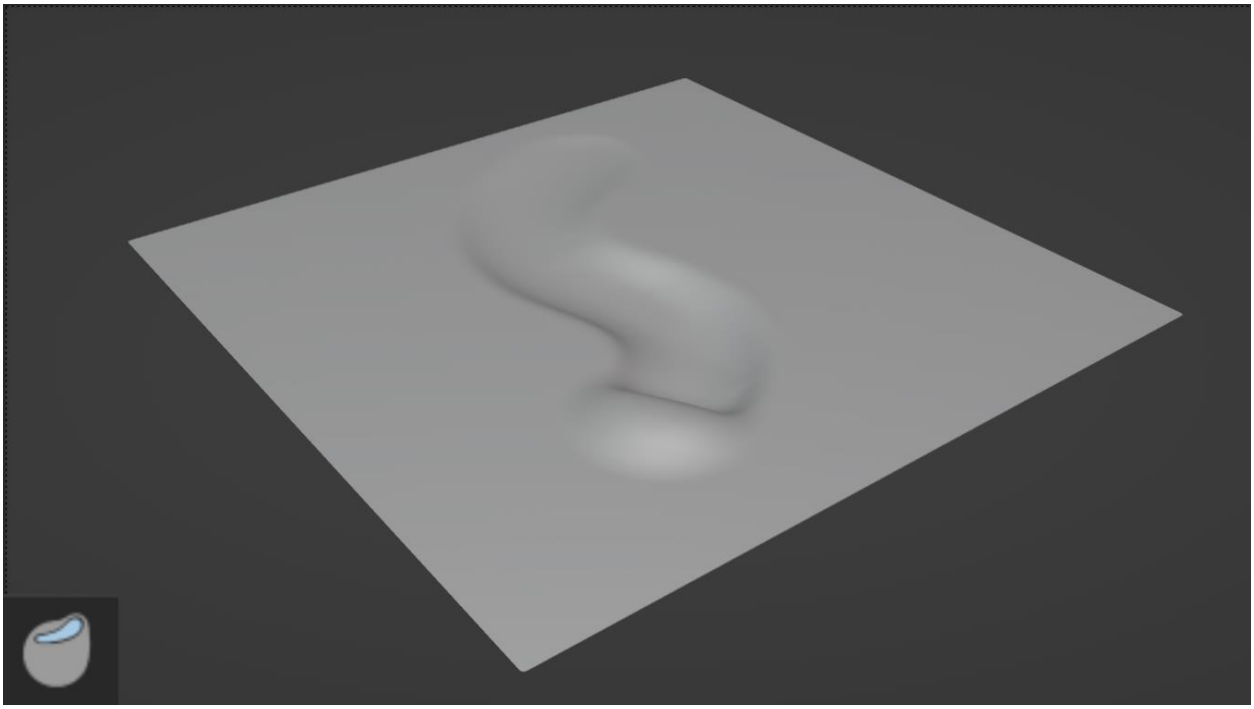

User Perspective
(50) Plane

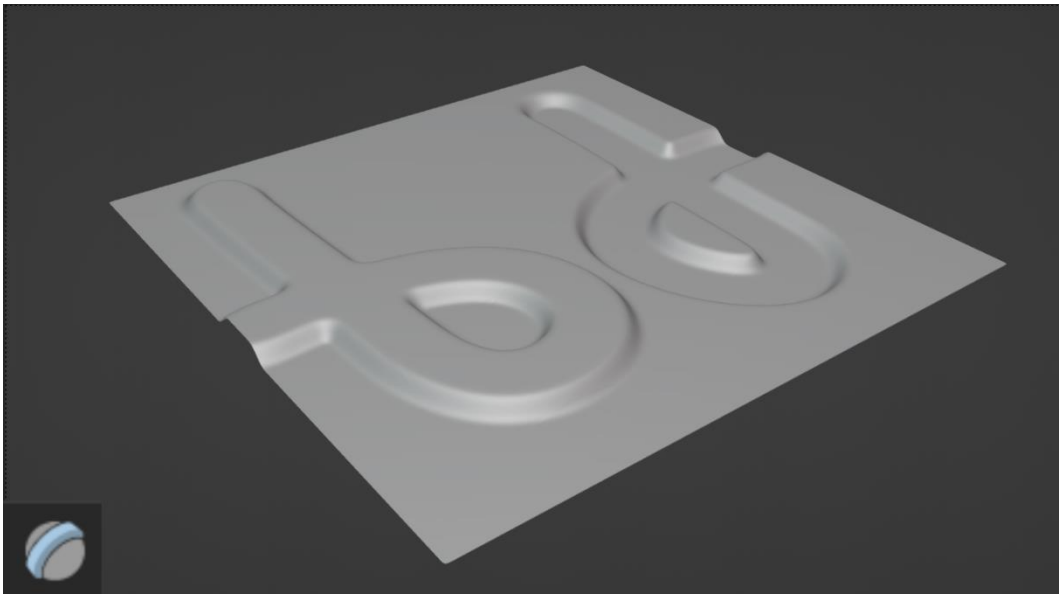


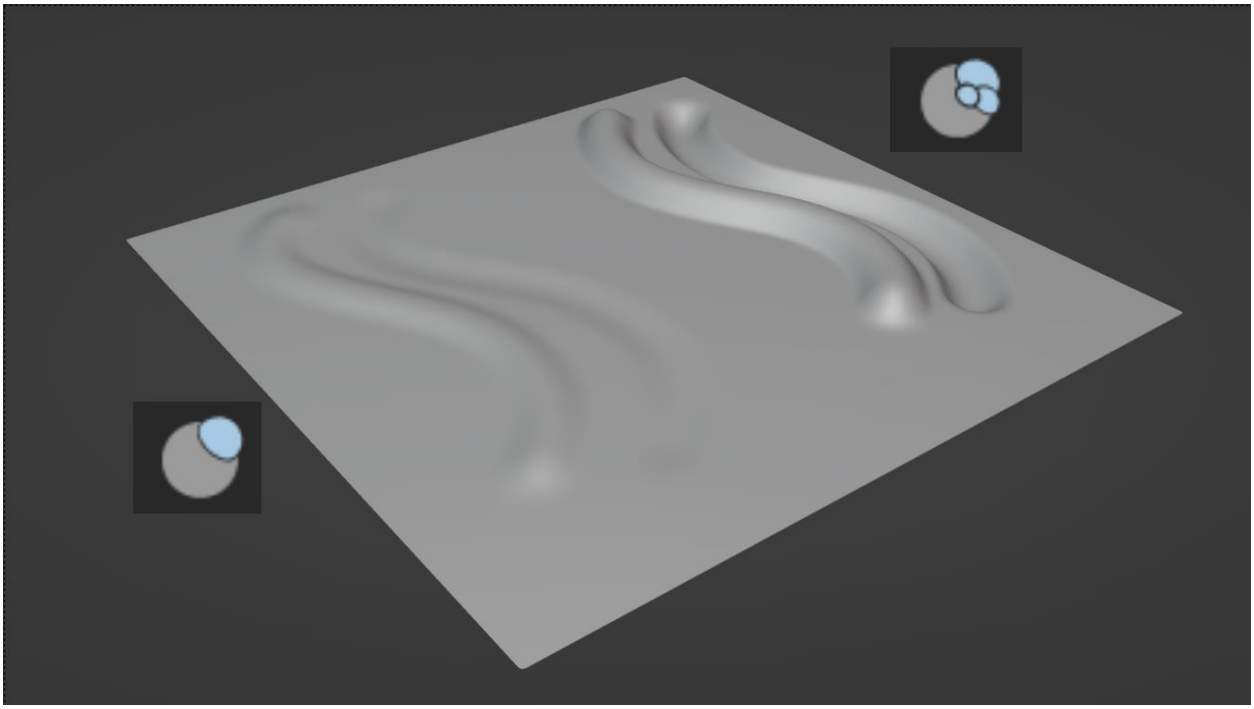


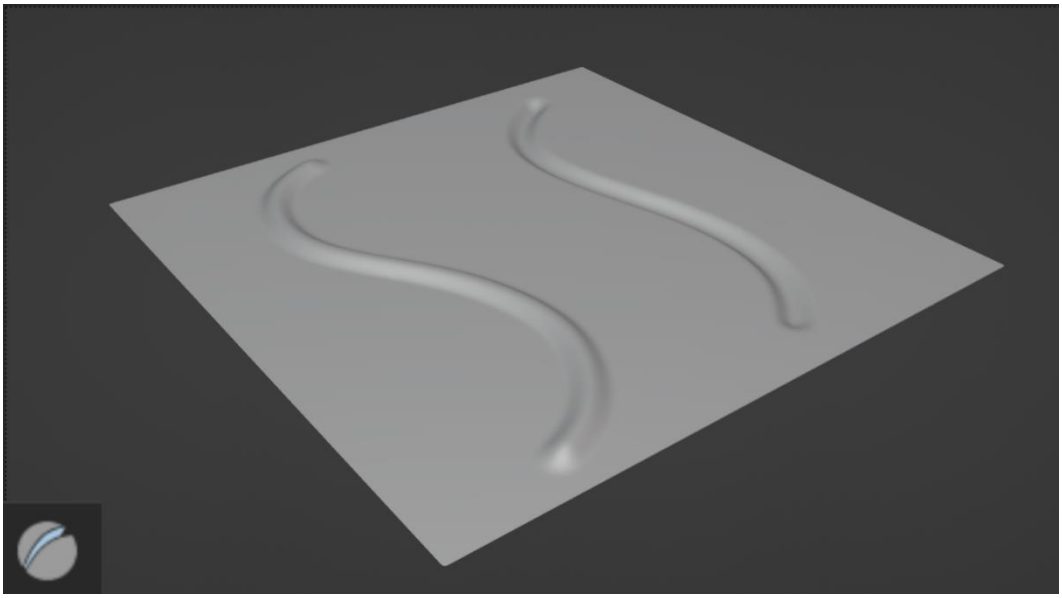


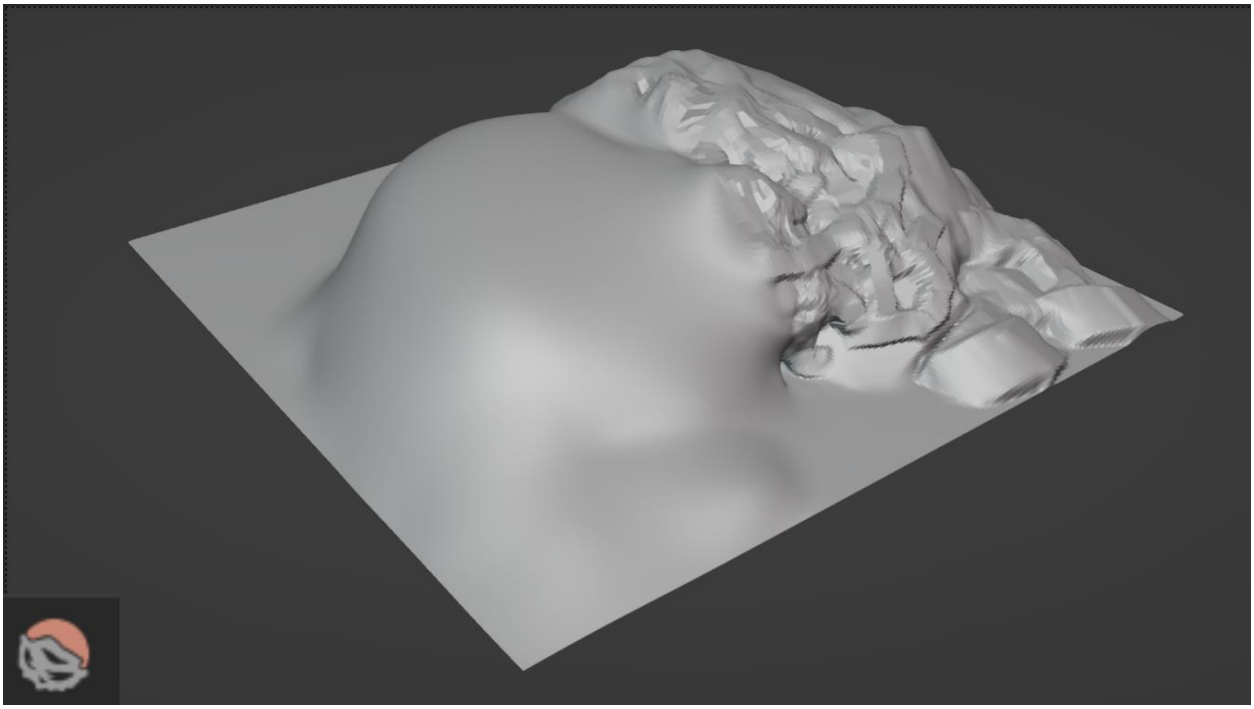


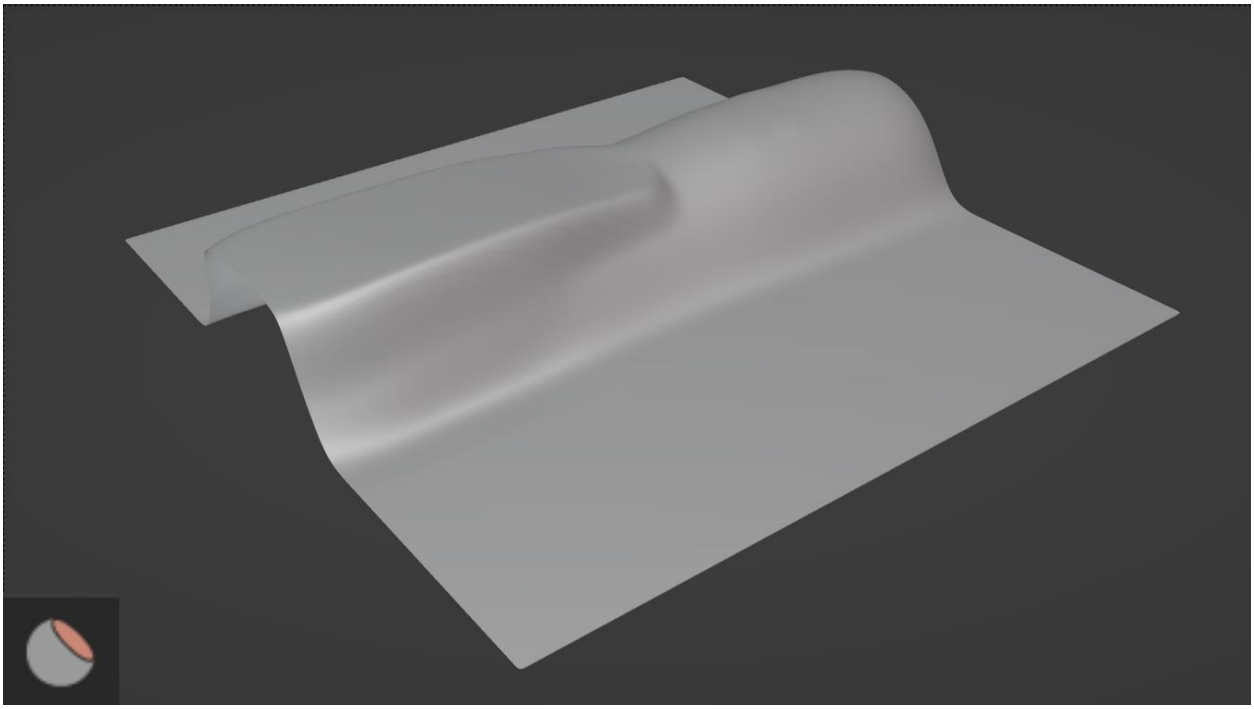


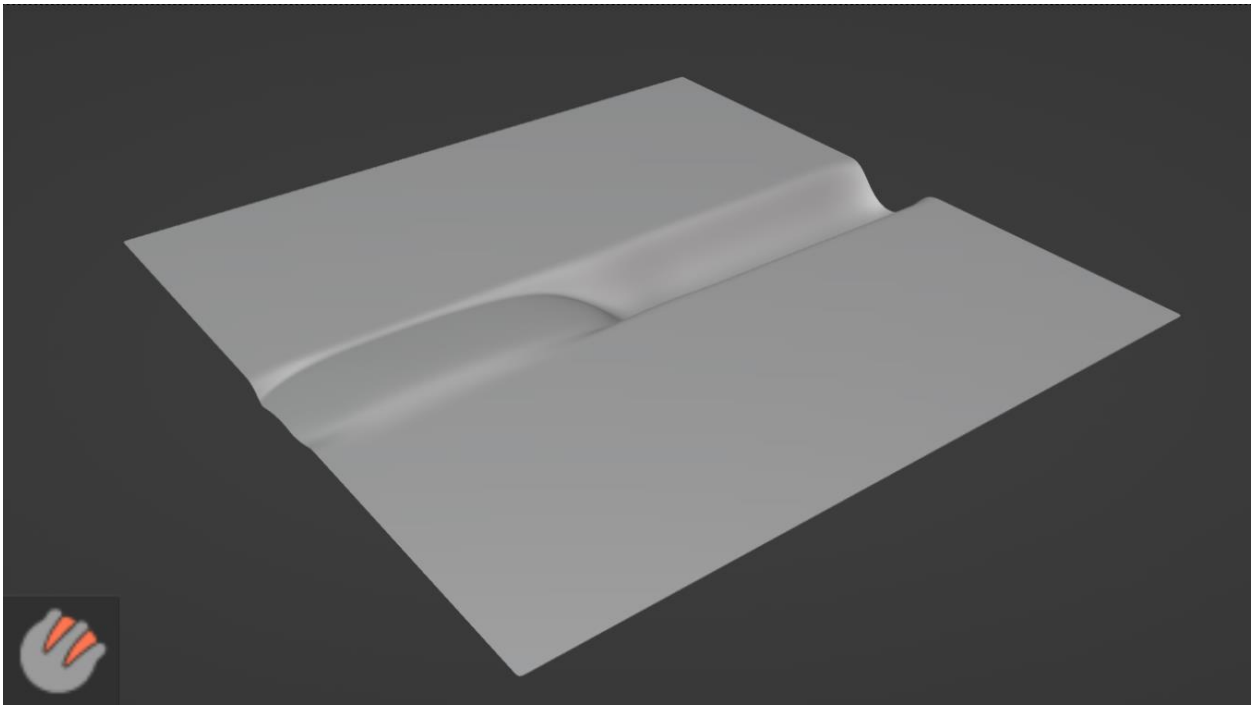


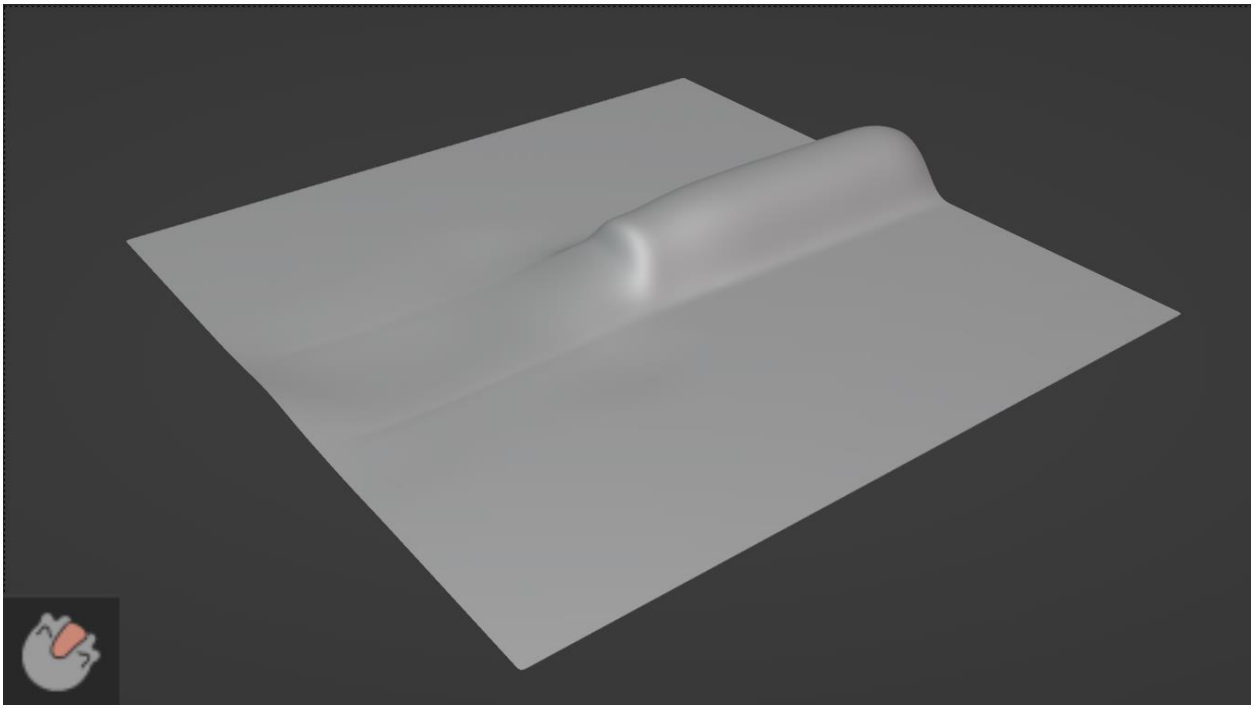


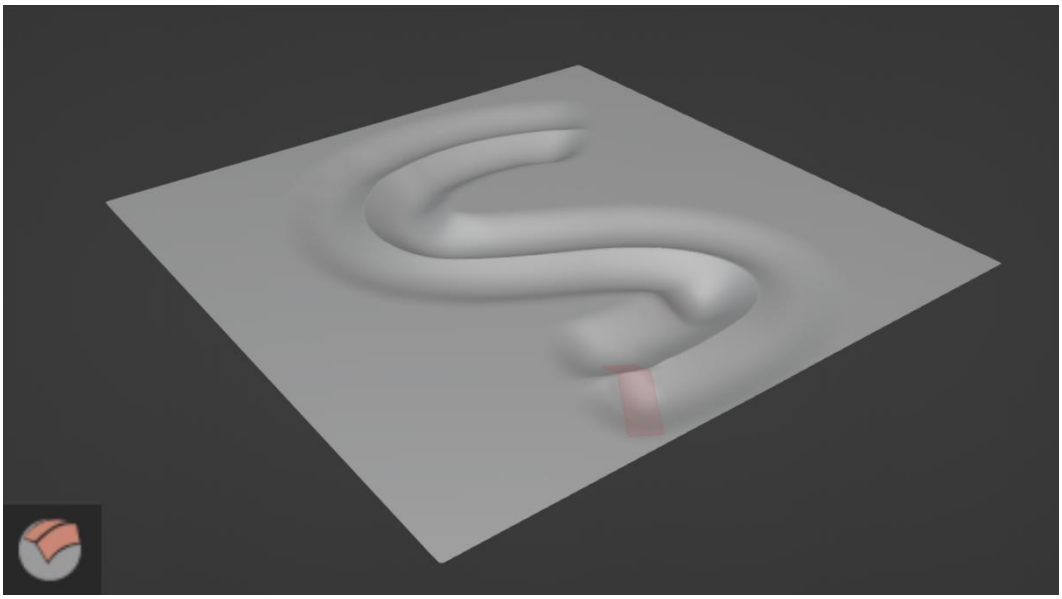


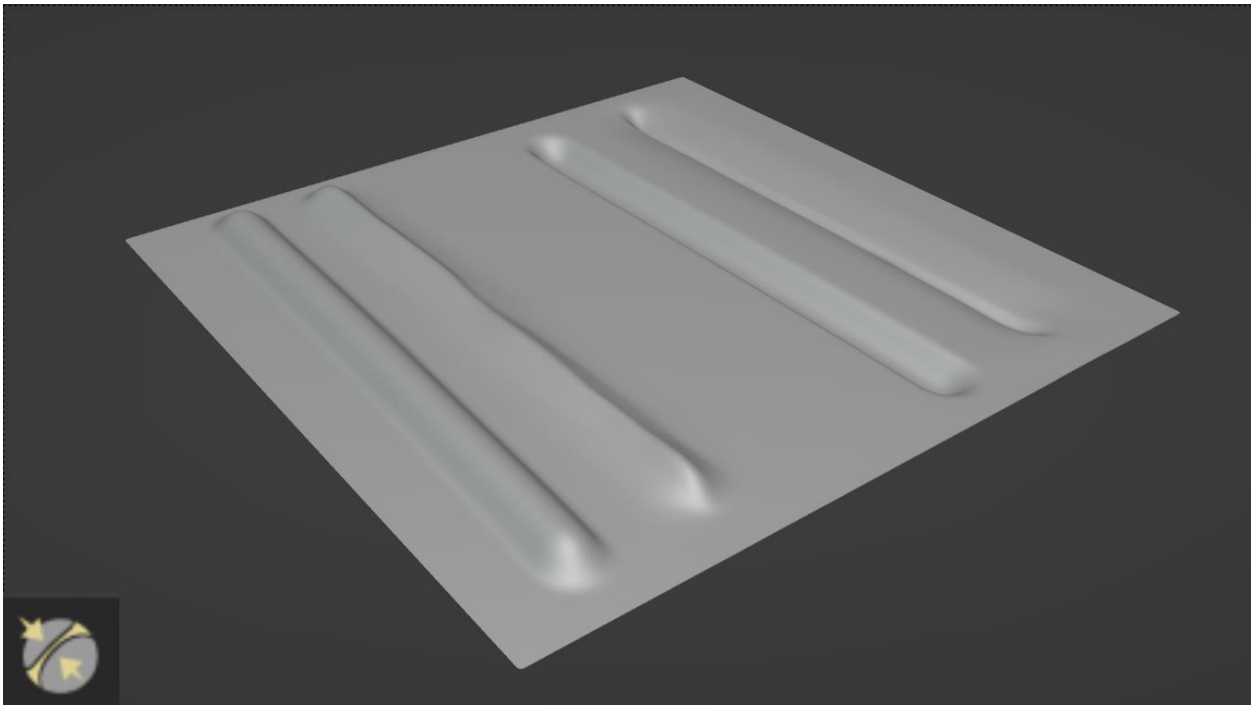


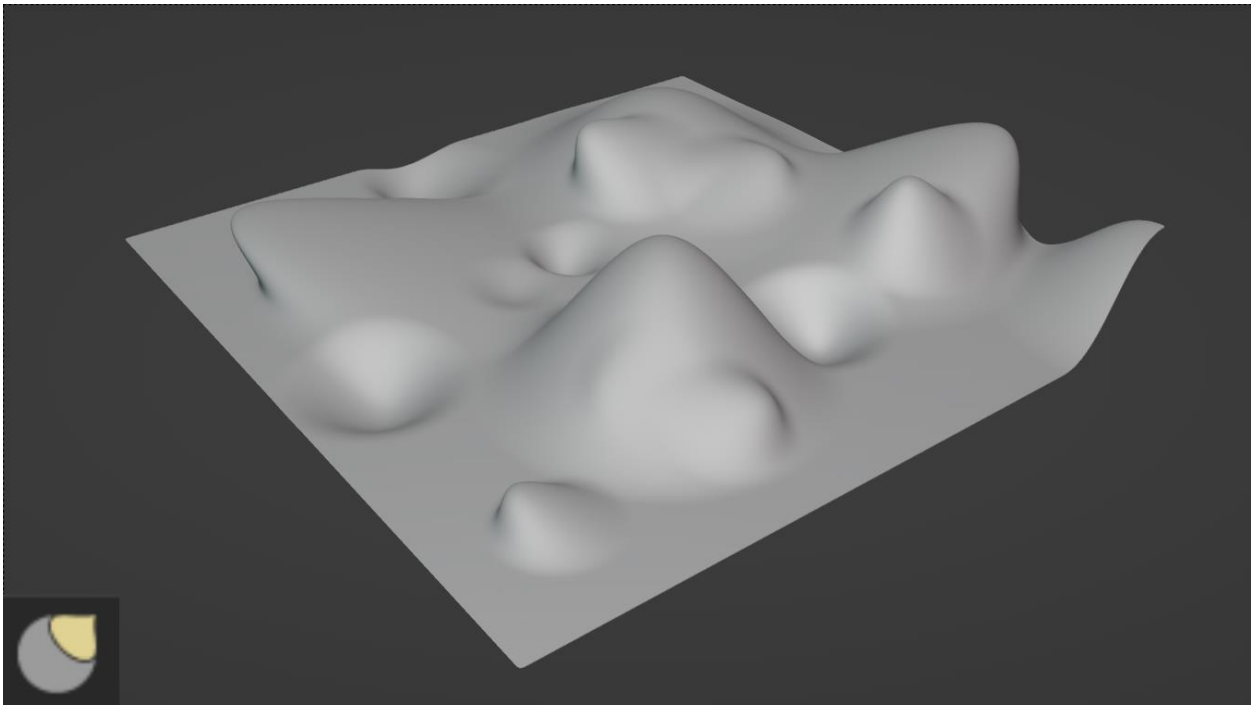


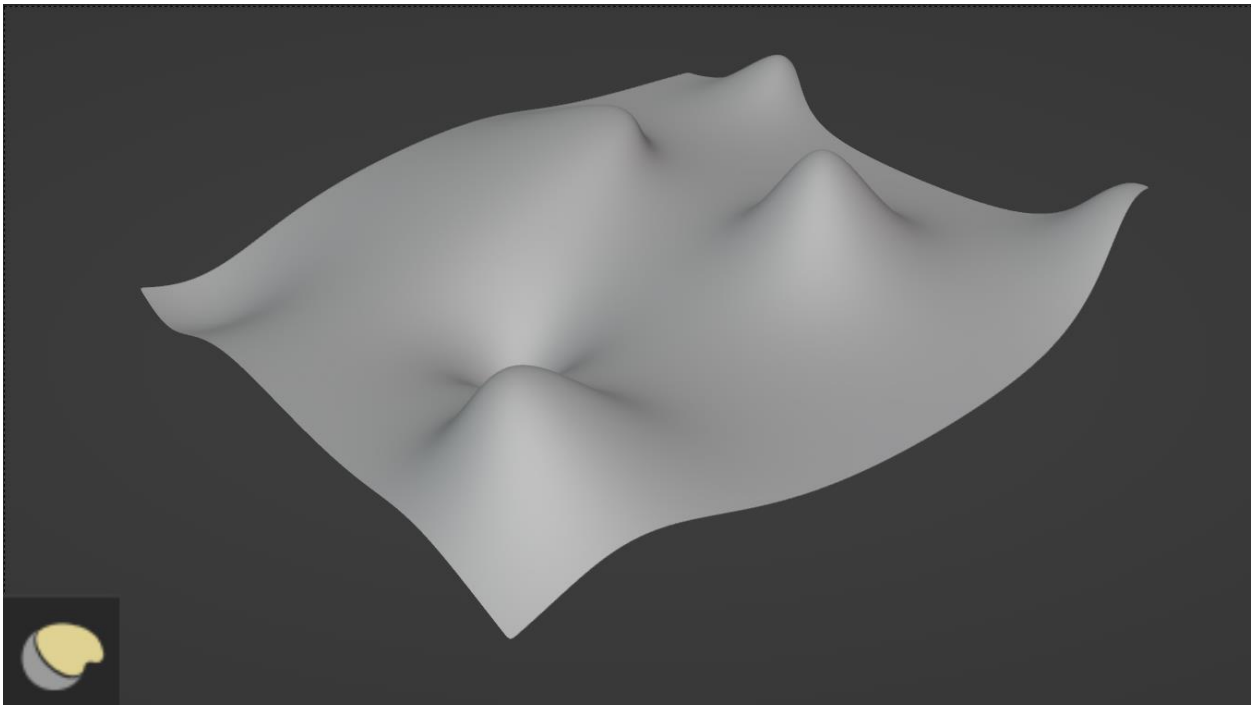


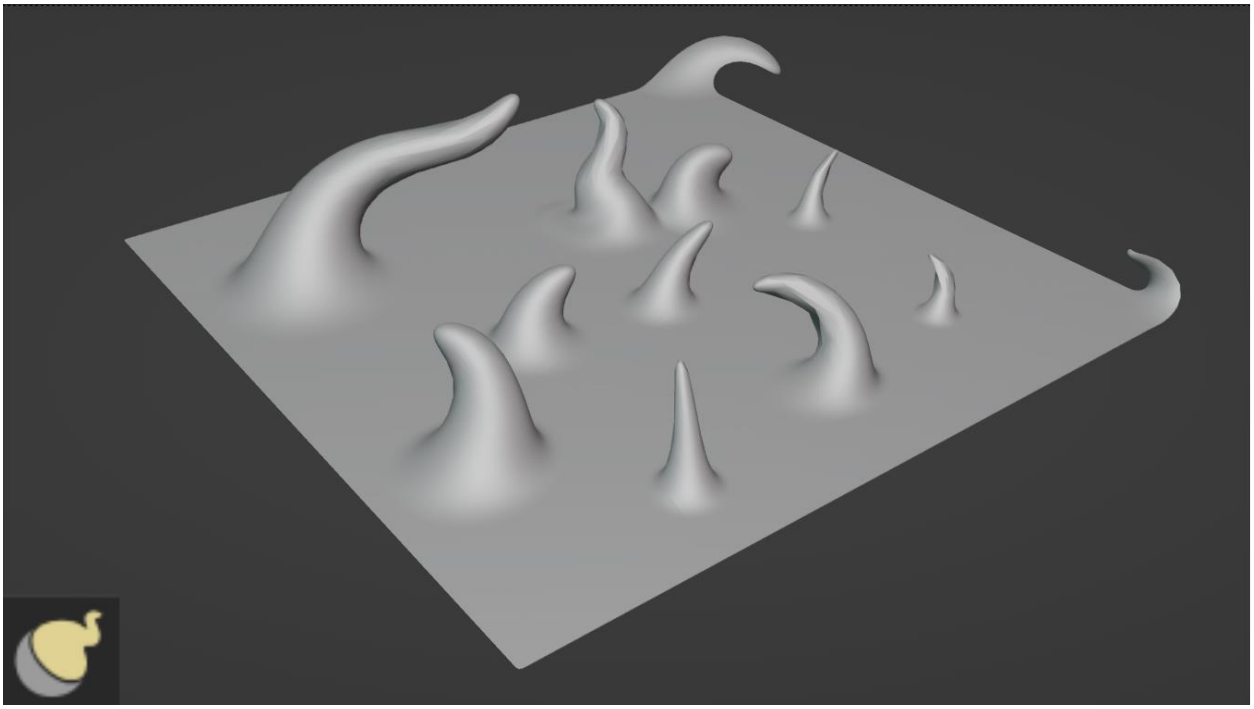


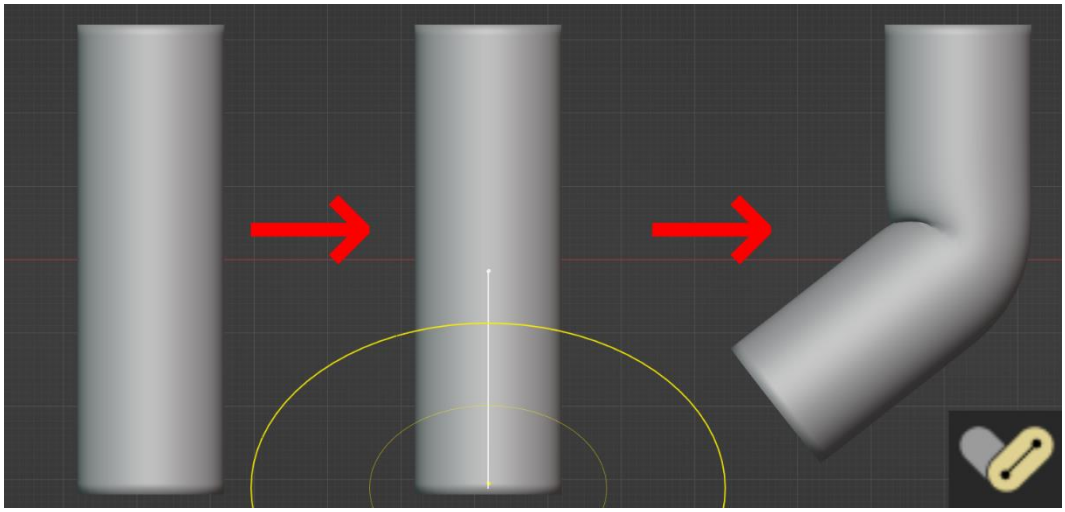


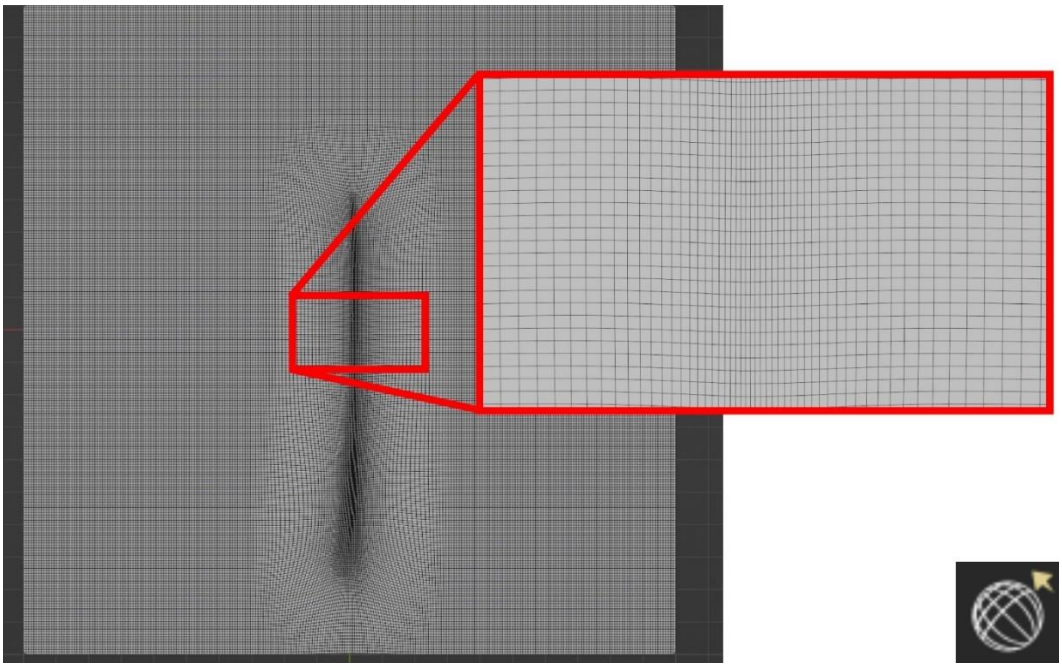


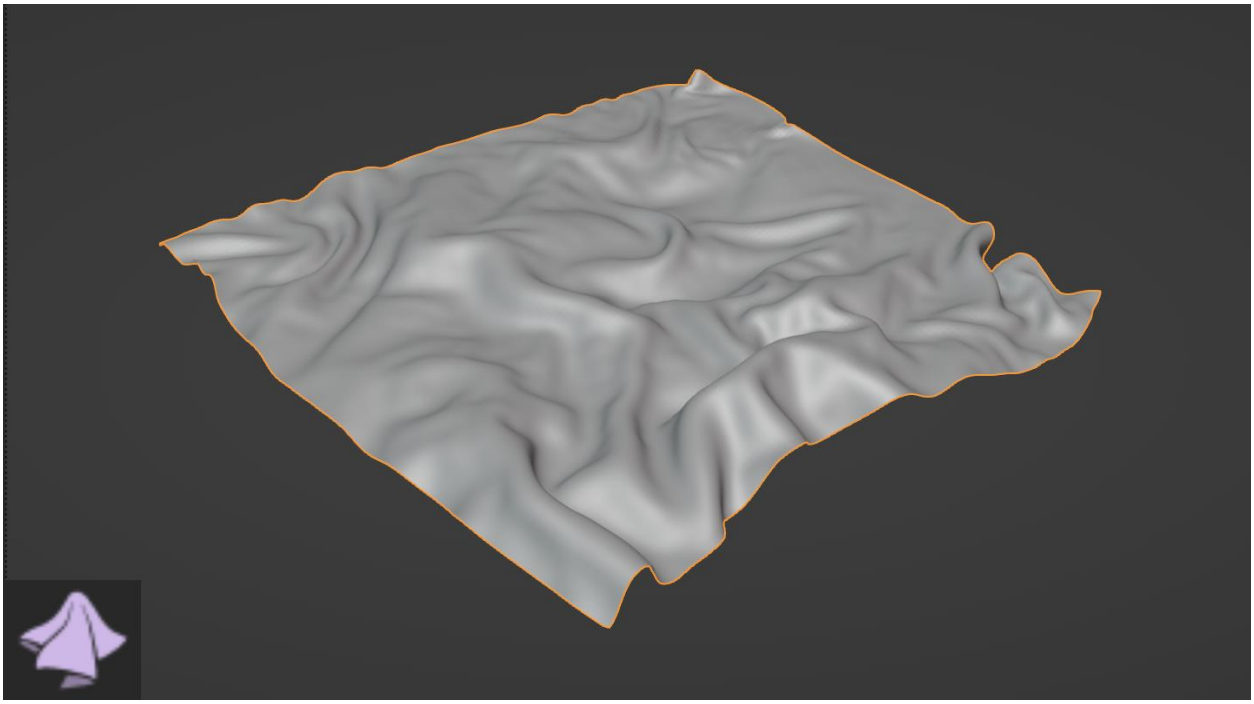


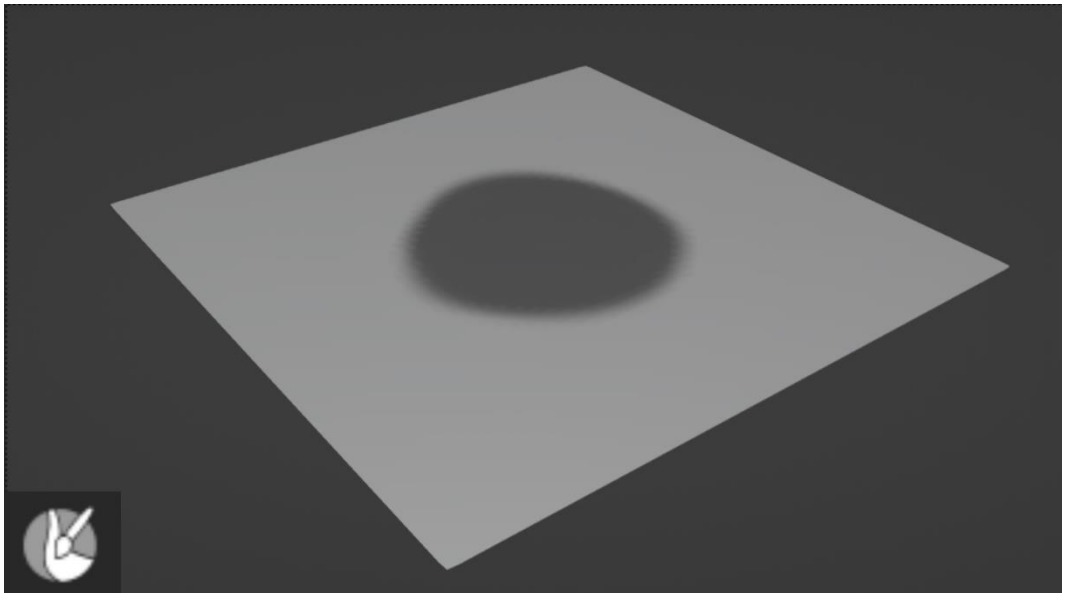


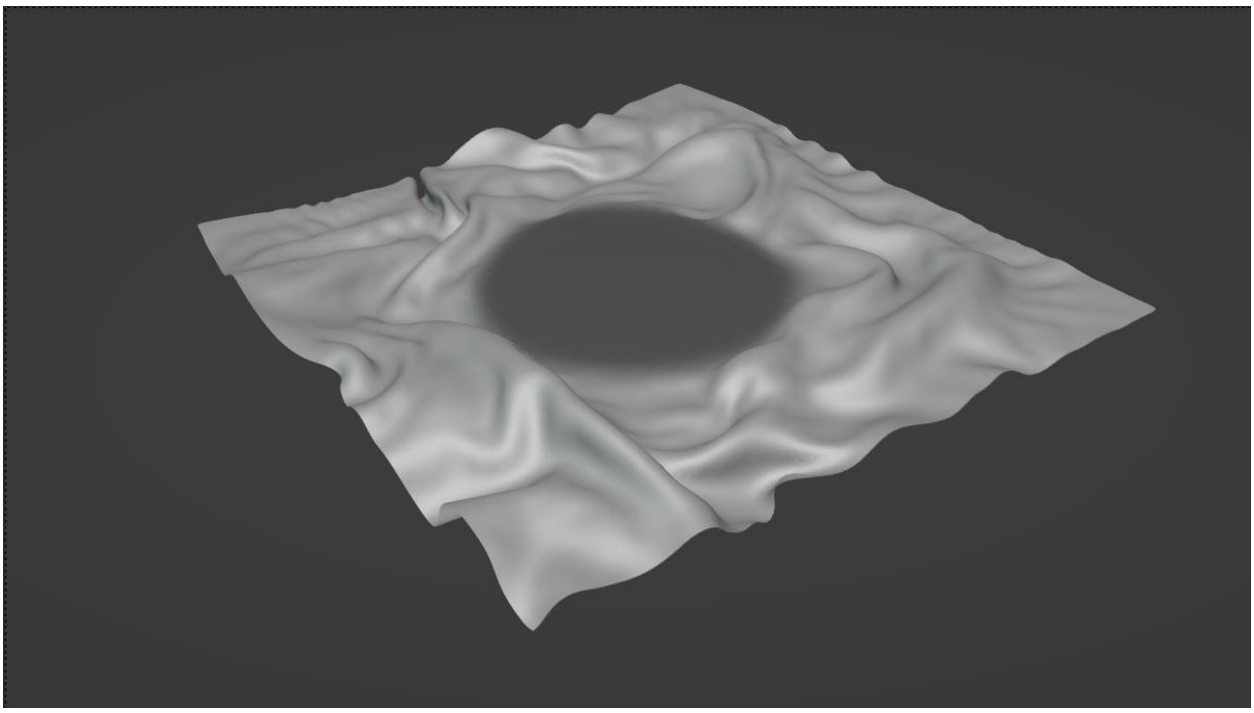


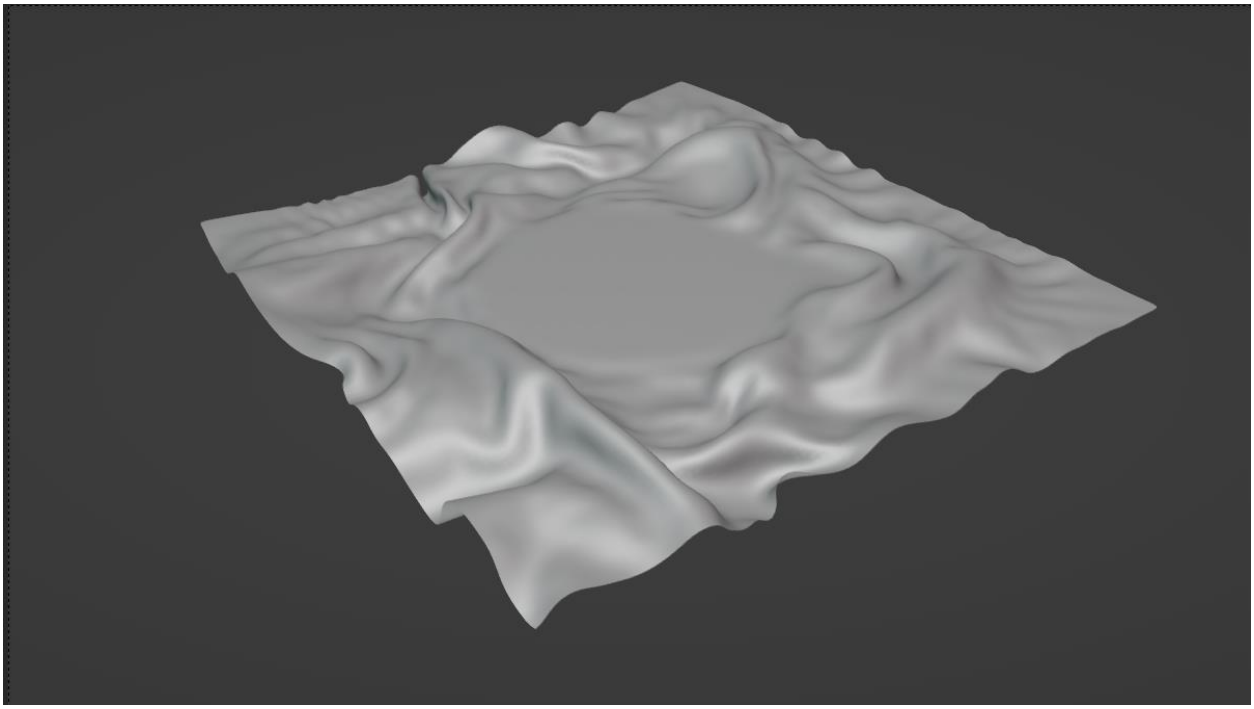


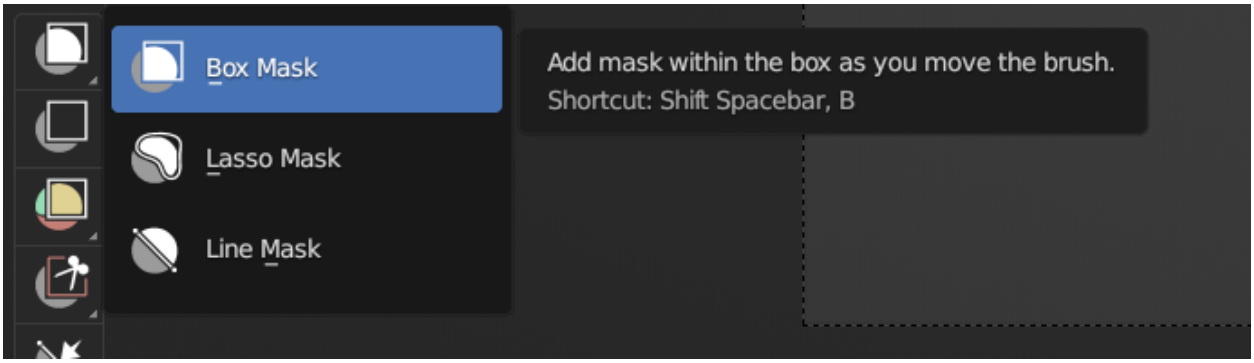


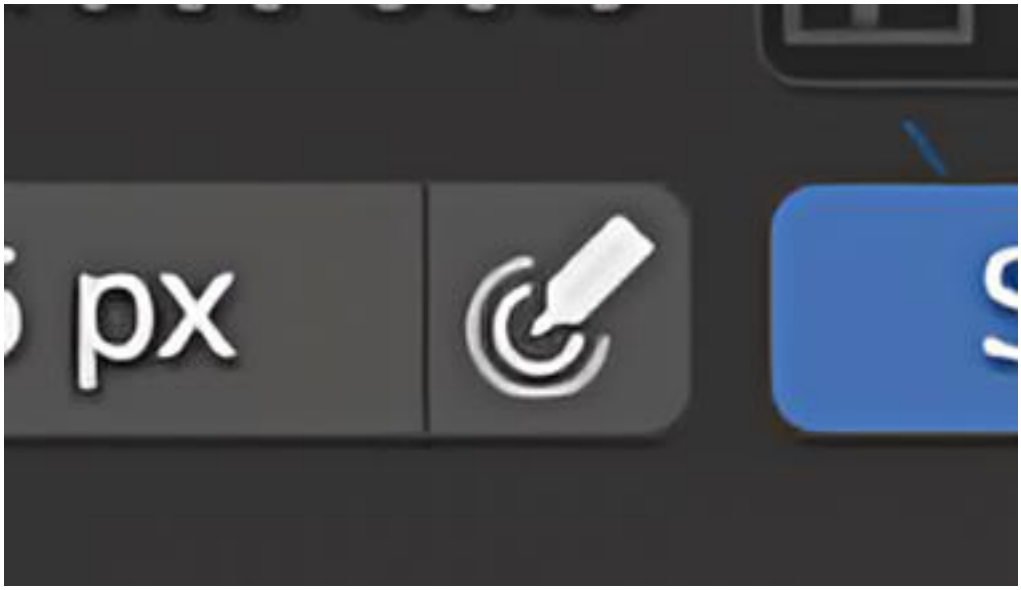


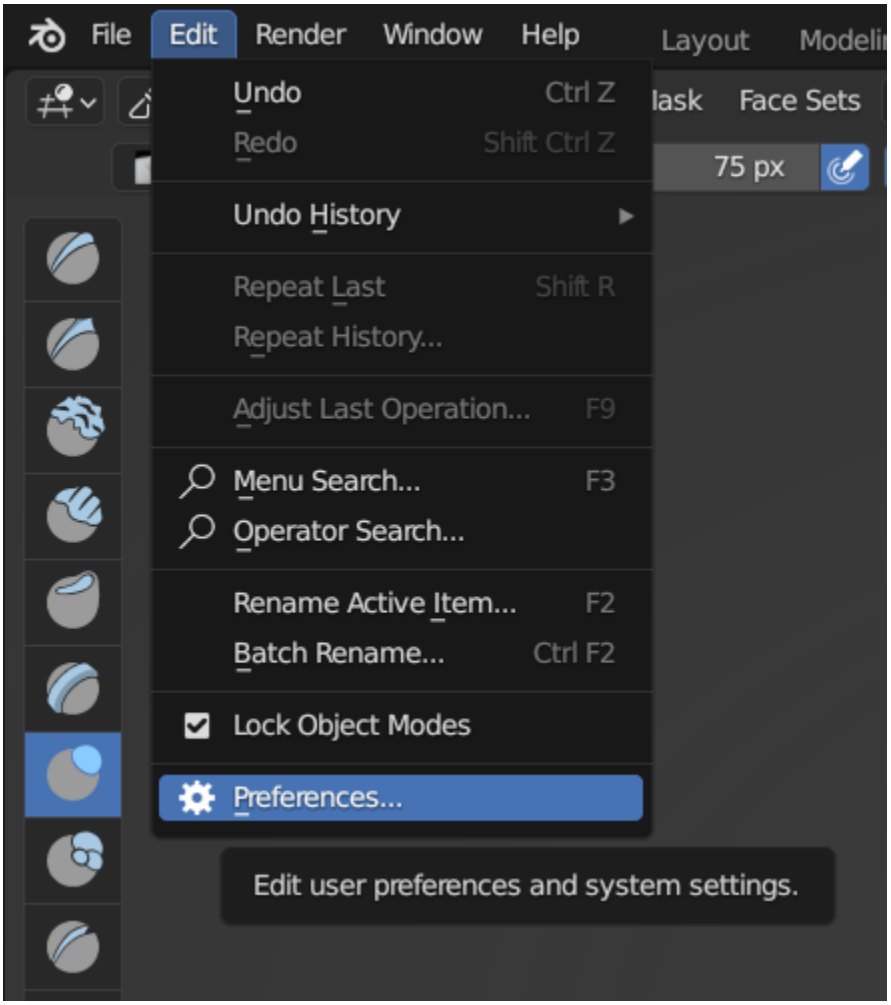


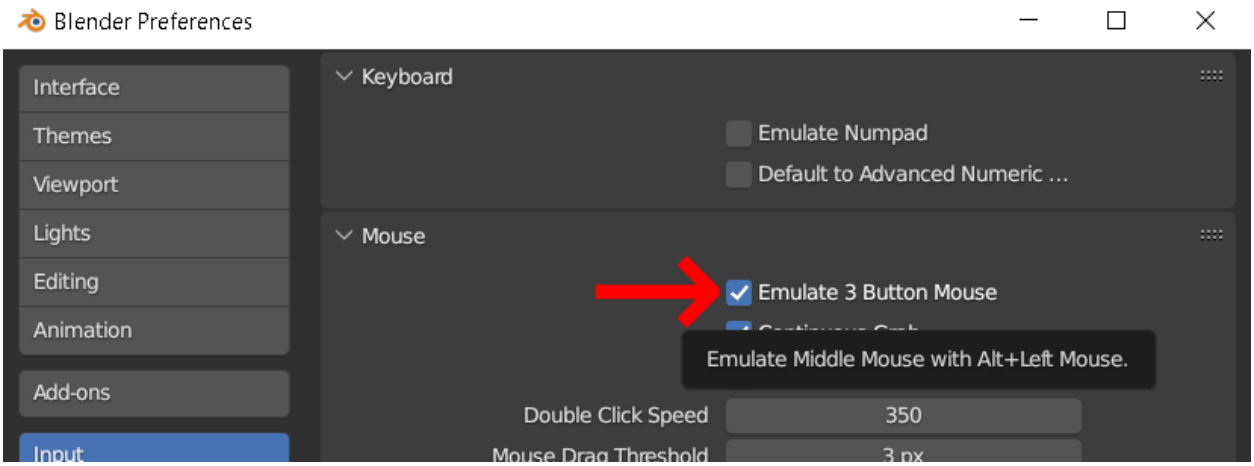


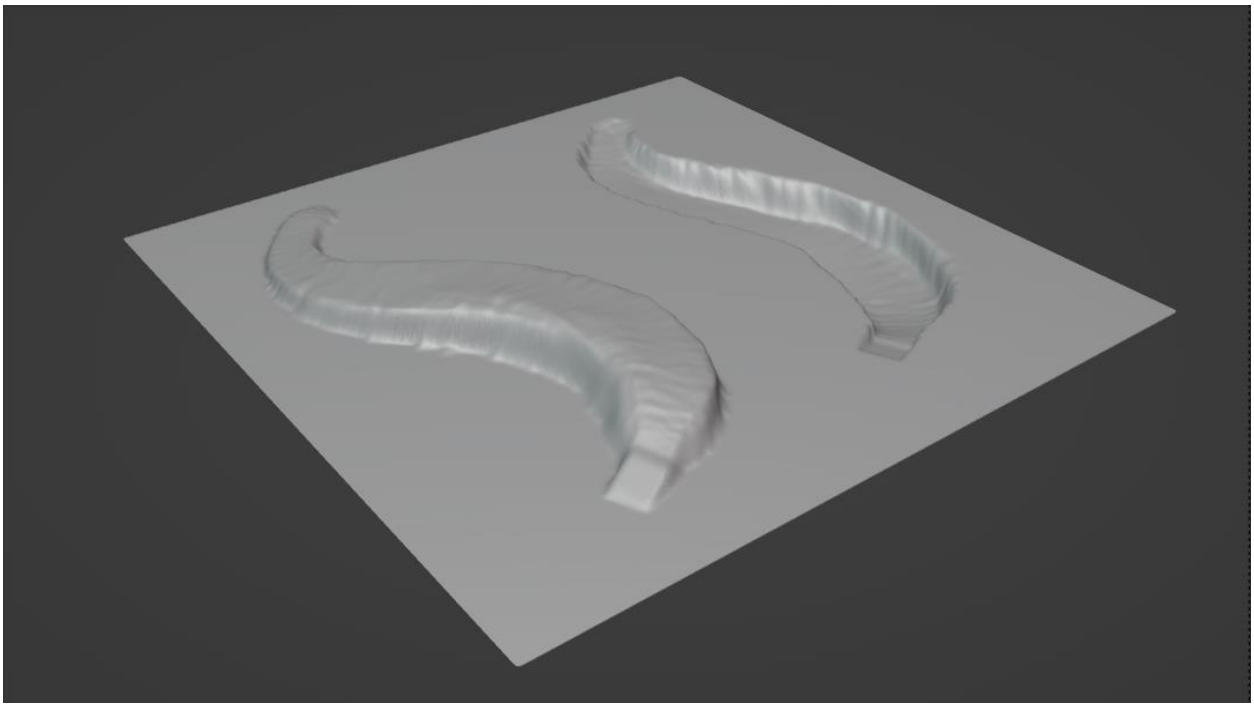


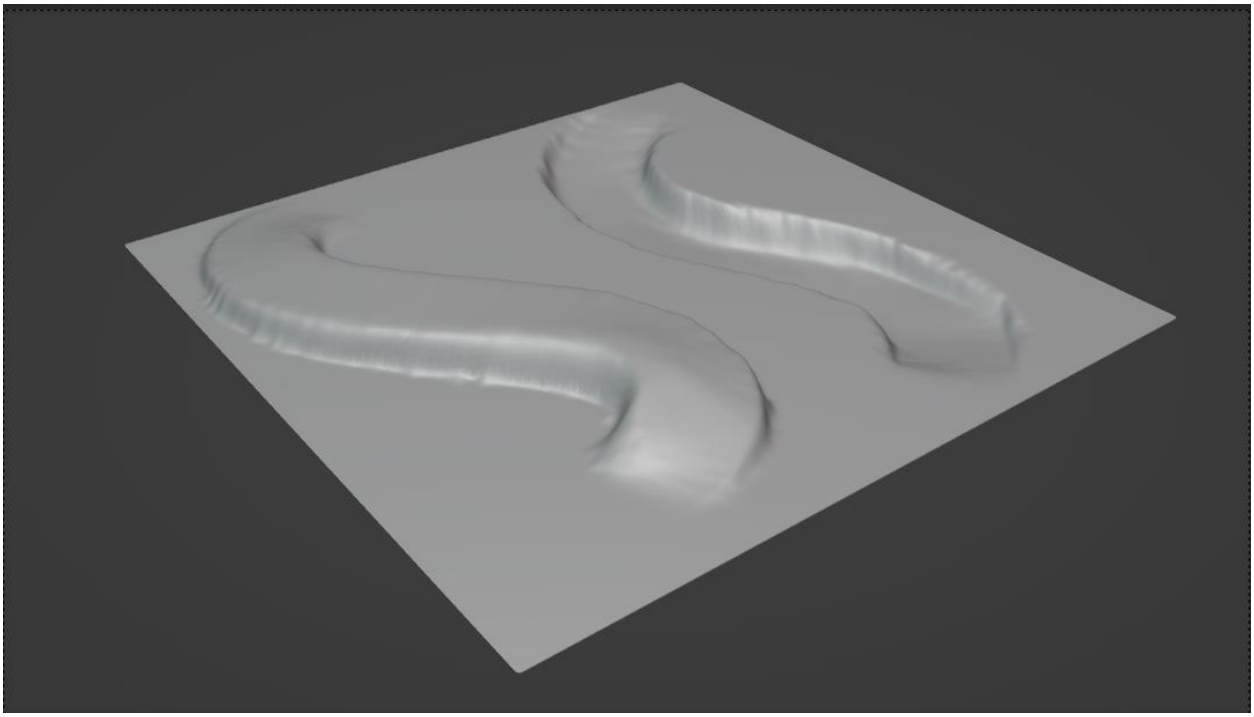

Box Mask
Lasso Mask
Line Mask
Add mask within the box as you move the brush.
Shortcut: Shift Spacebar, B

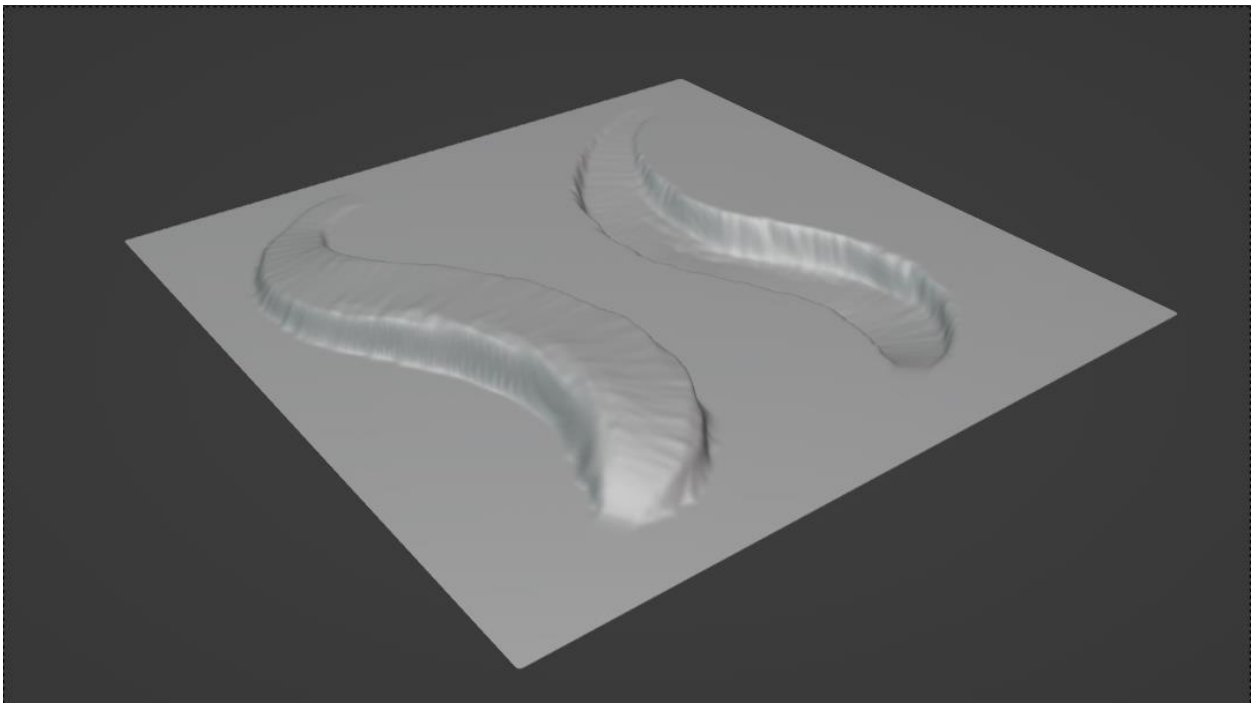

px

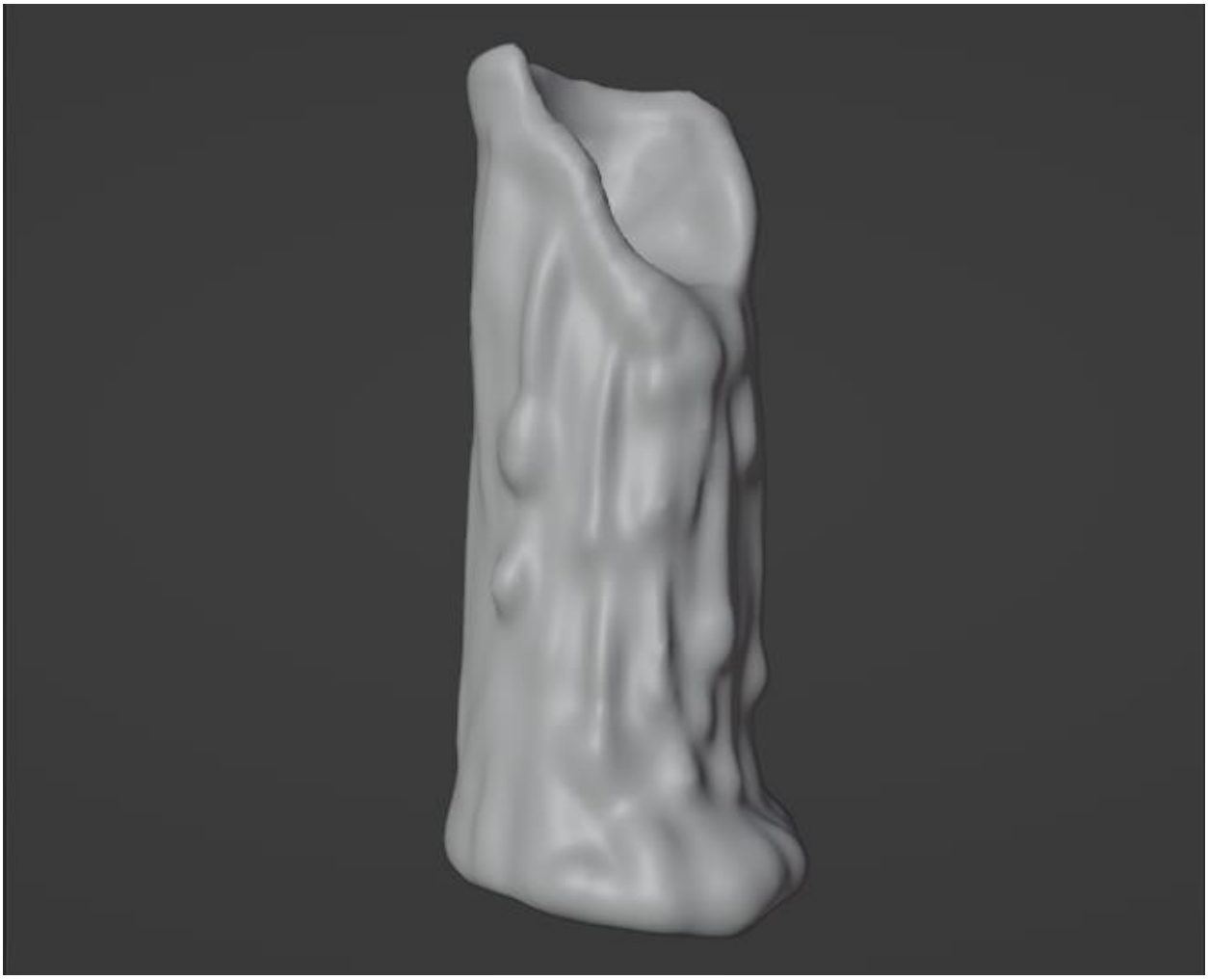

File
Edit
Render
Window
Help
Layout
Undo Ctrl Z
Redo Shift Ctrl Z
Undo History
Repeat Last Shift R
Repeat History...
Adjust Last Operation... F9
Menu Search... F3
Operator Search...
Rename Active Item... F2
Batch Rename... Ctrl F2
Lock Object Modes
Preferences...
Face Sets
75 px
Edit user preferences and system settings.

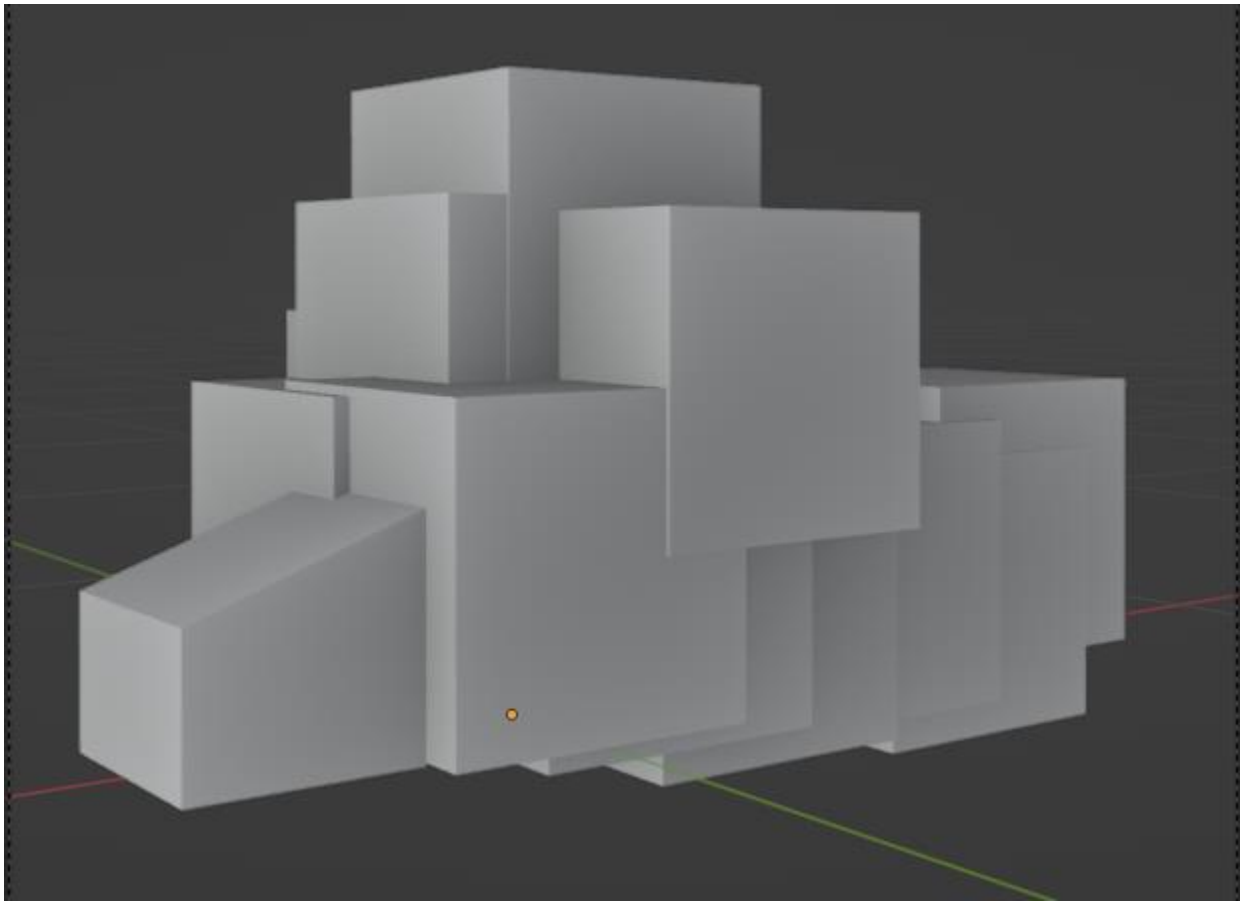

Blender Preferences
Interface
Themes
Viewport
Lights
Editing
Animation
Add-ons
Input
Keyboard
Emulate Numpad
Default to Advanced Numeric ...
Mouse
Emulate 3 Button Mouse
Emulate Middle Mouse with Alt+Left Mouse.
Double Click Speed
350
Mouse Drag Threshold
3 px

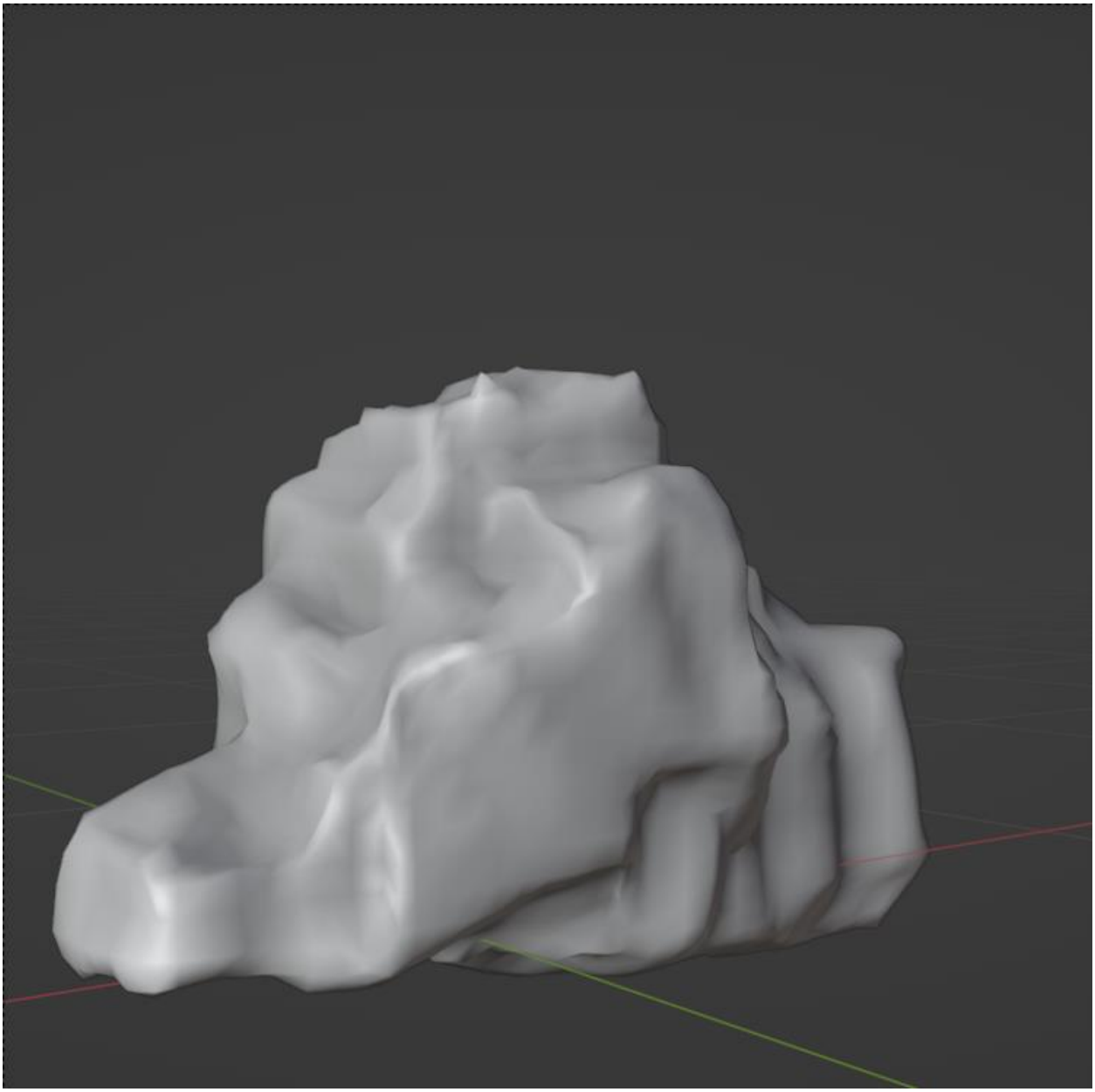


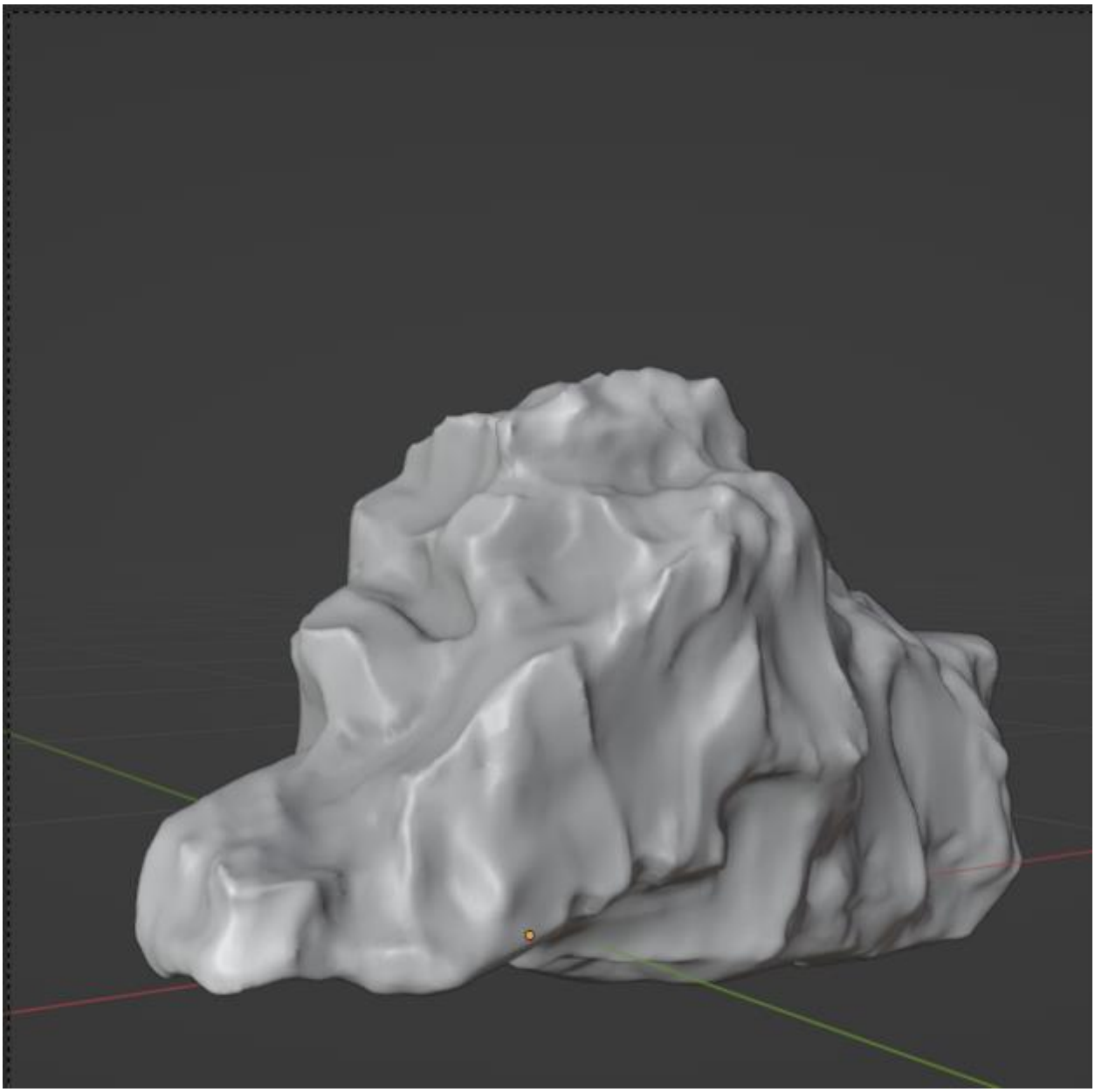


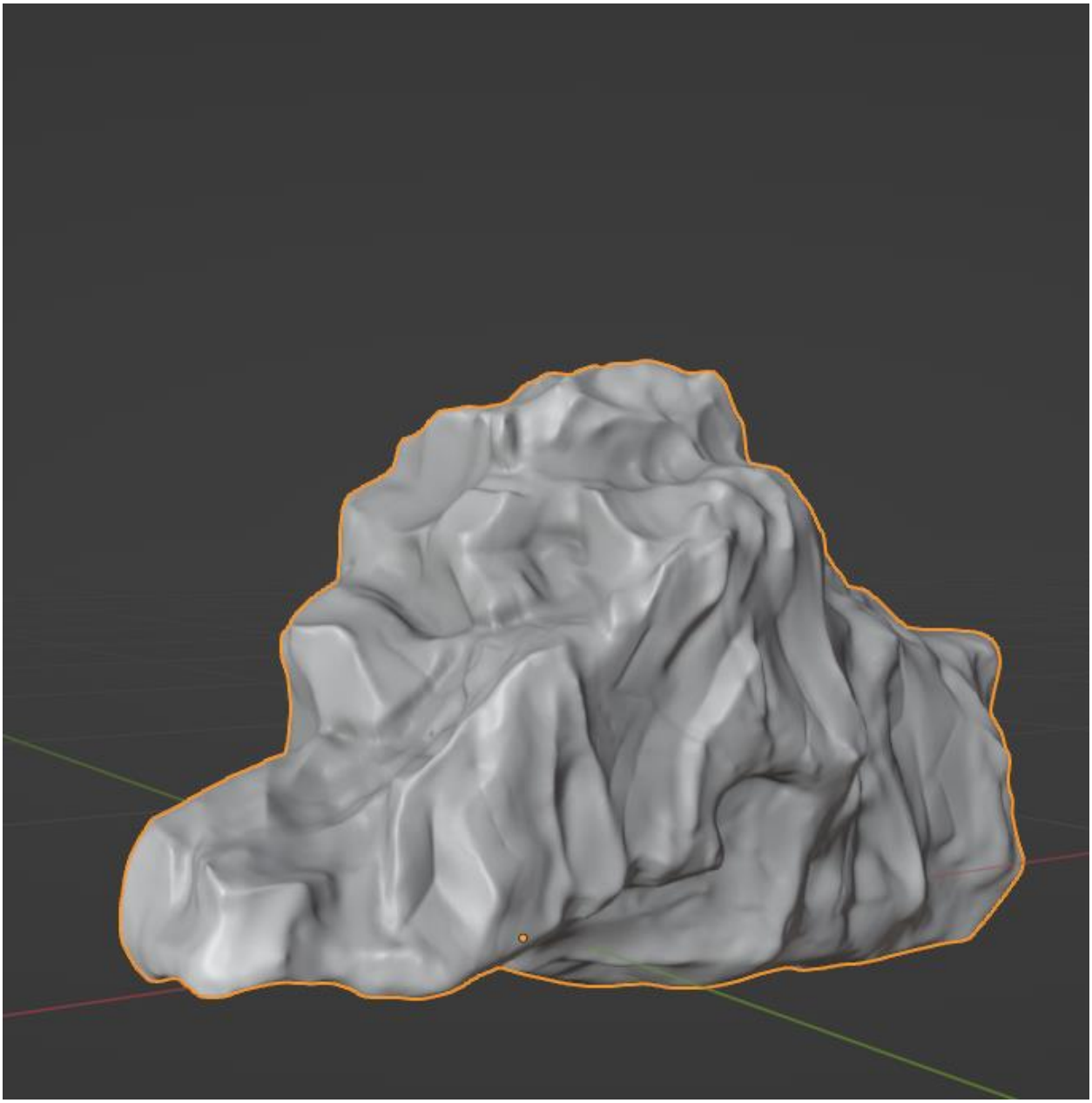


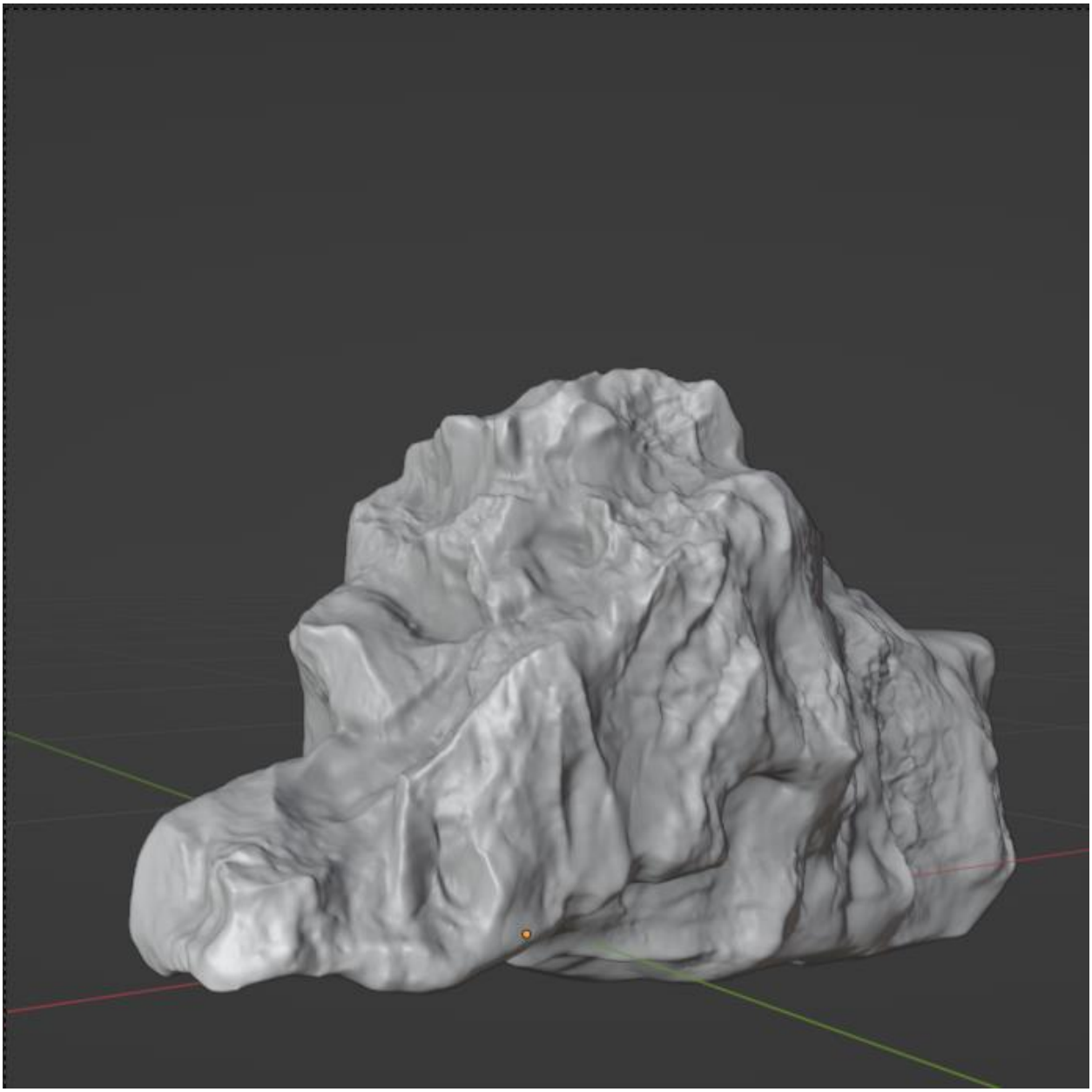




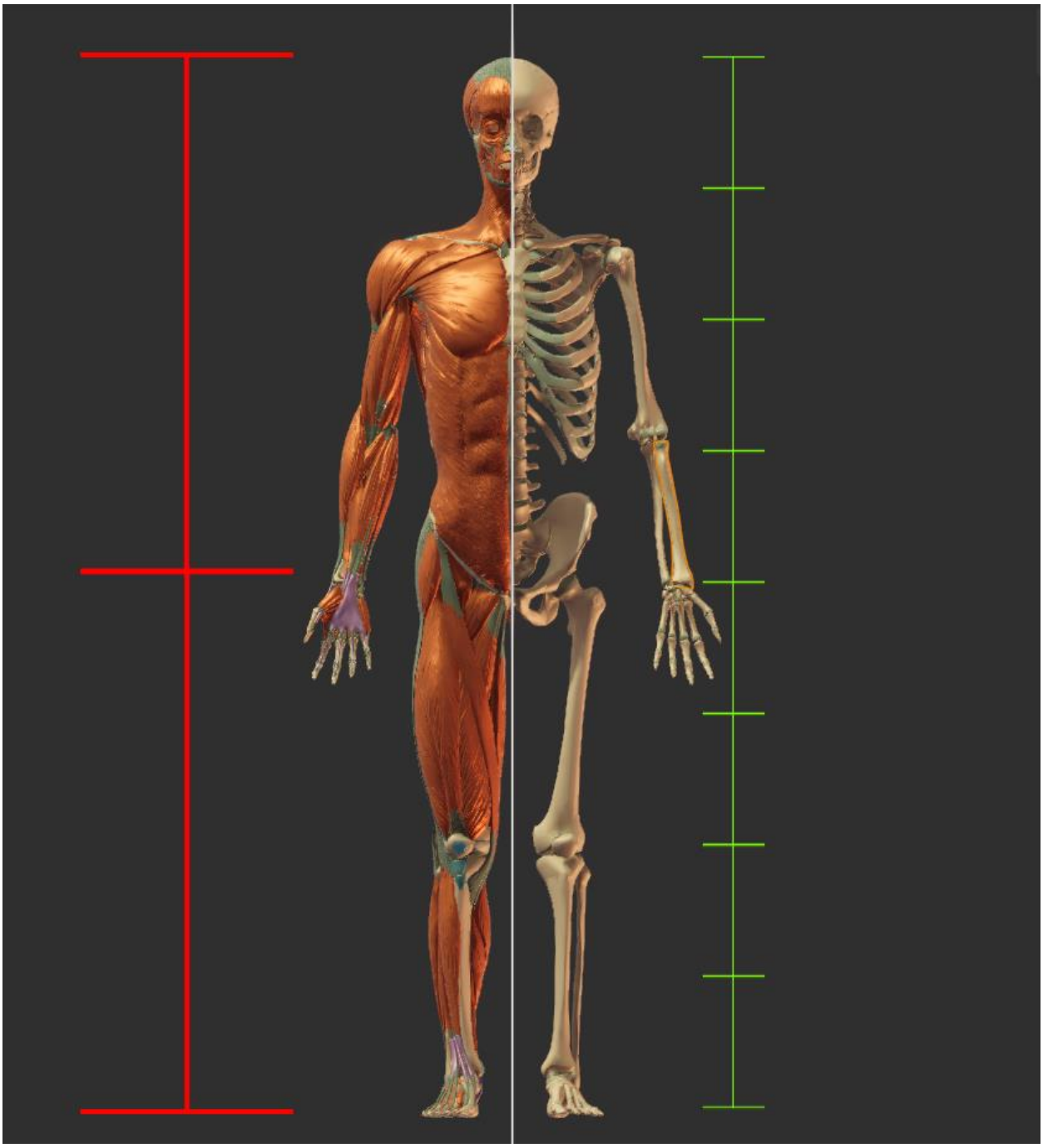


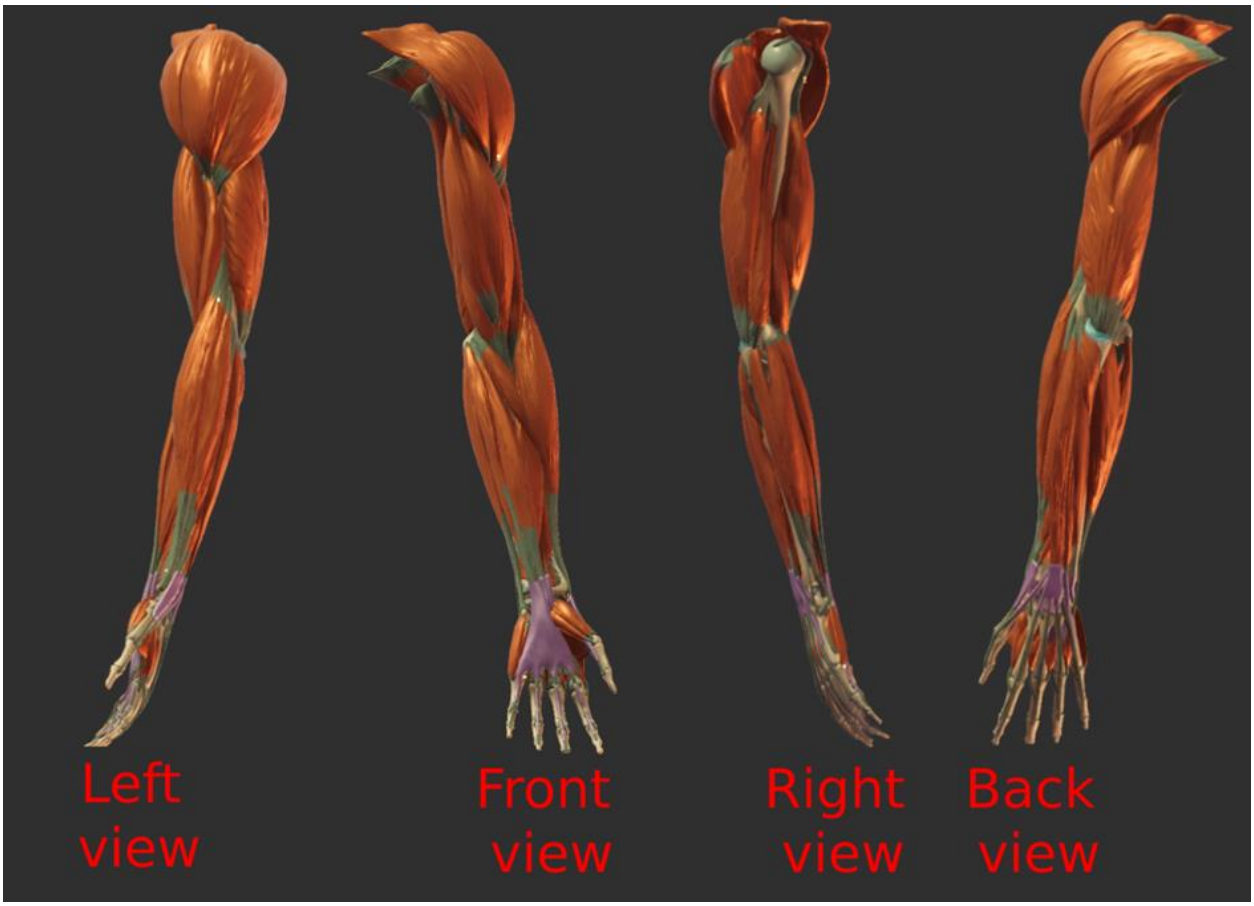


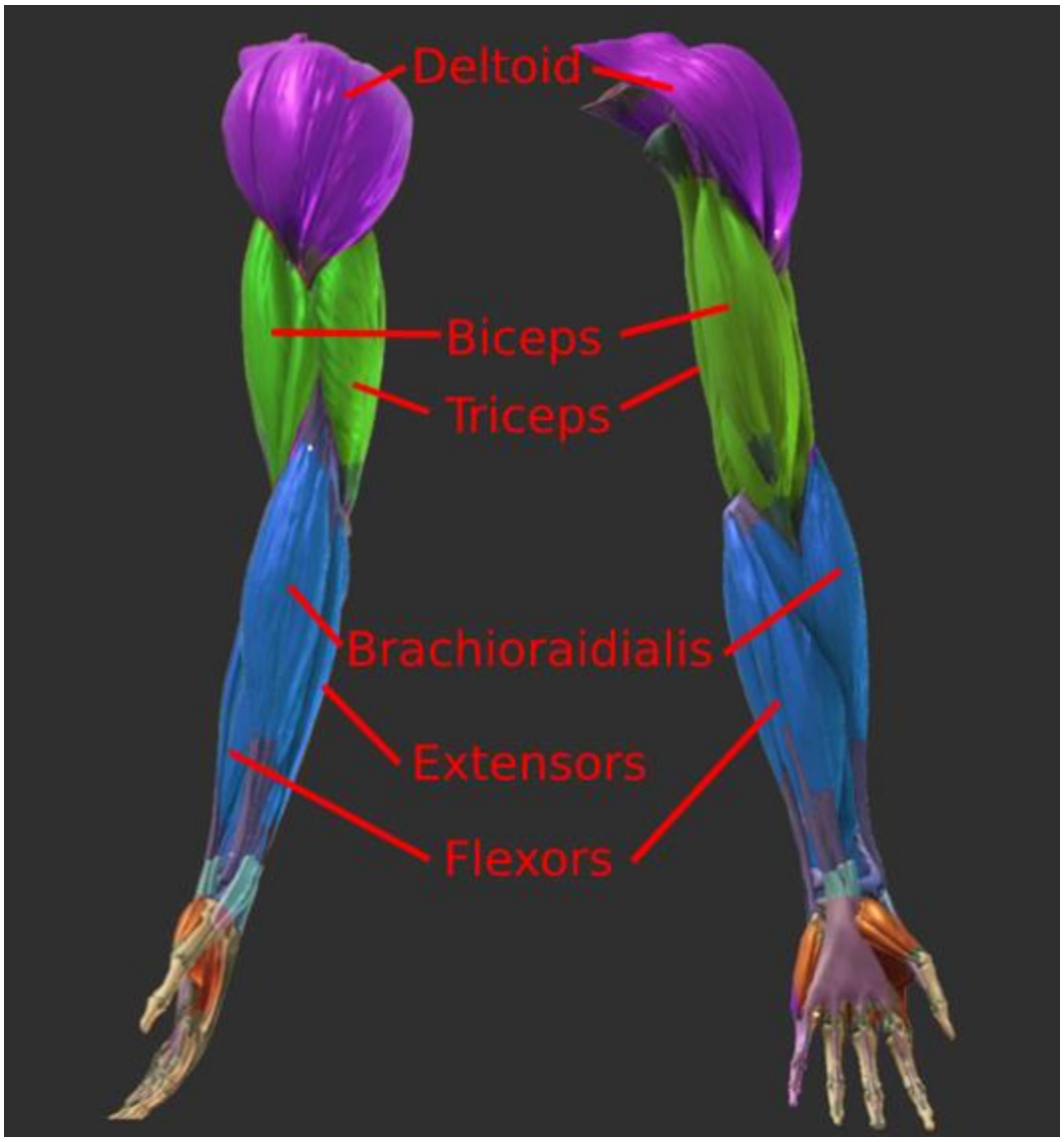


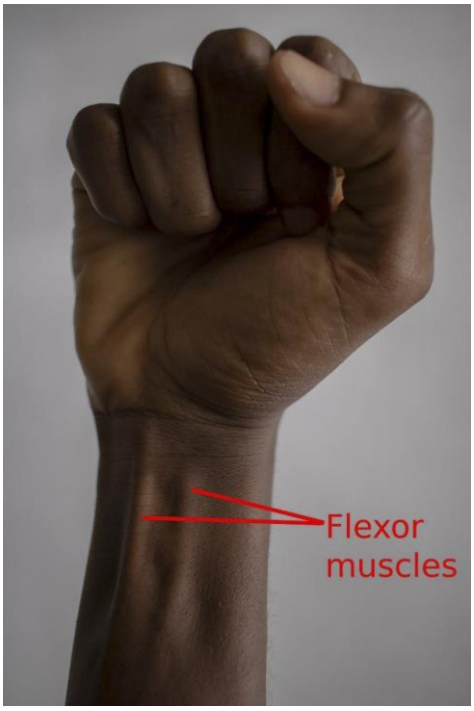


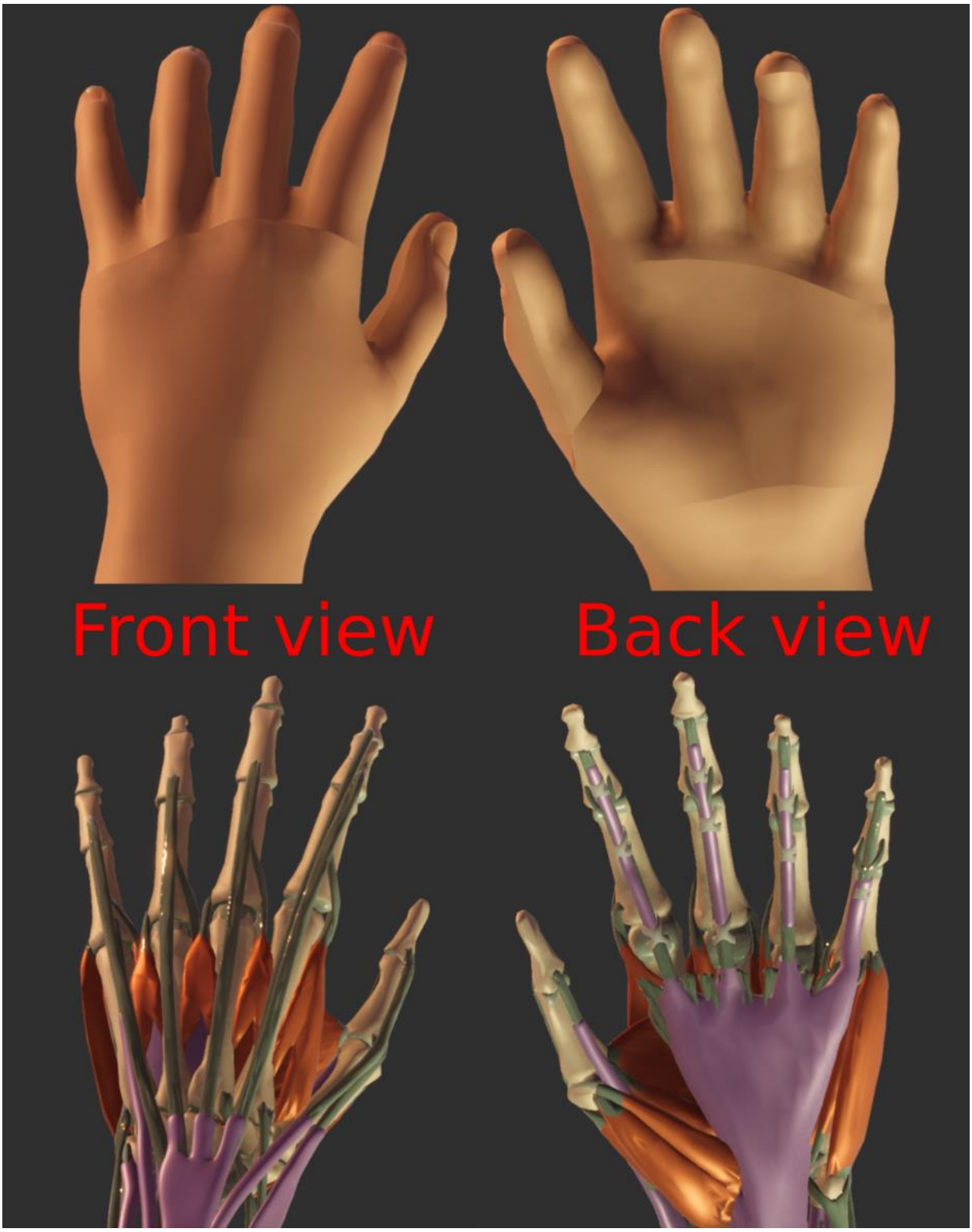
Chapter 7: Making the Base Mesh for a Humanoid Character

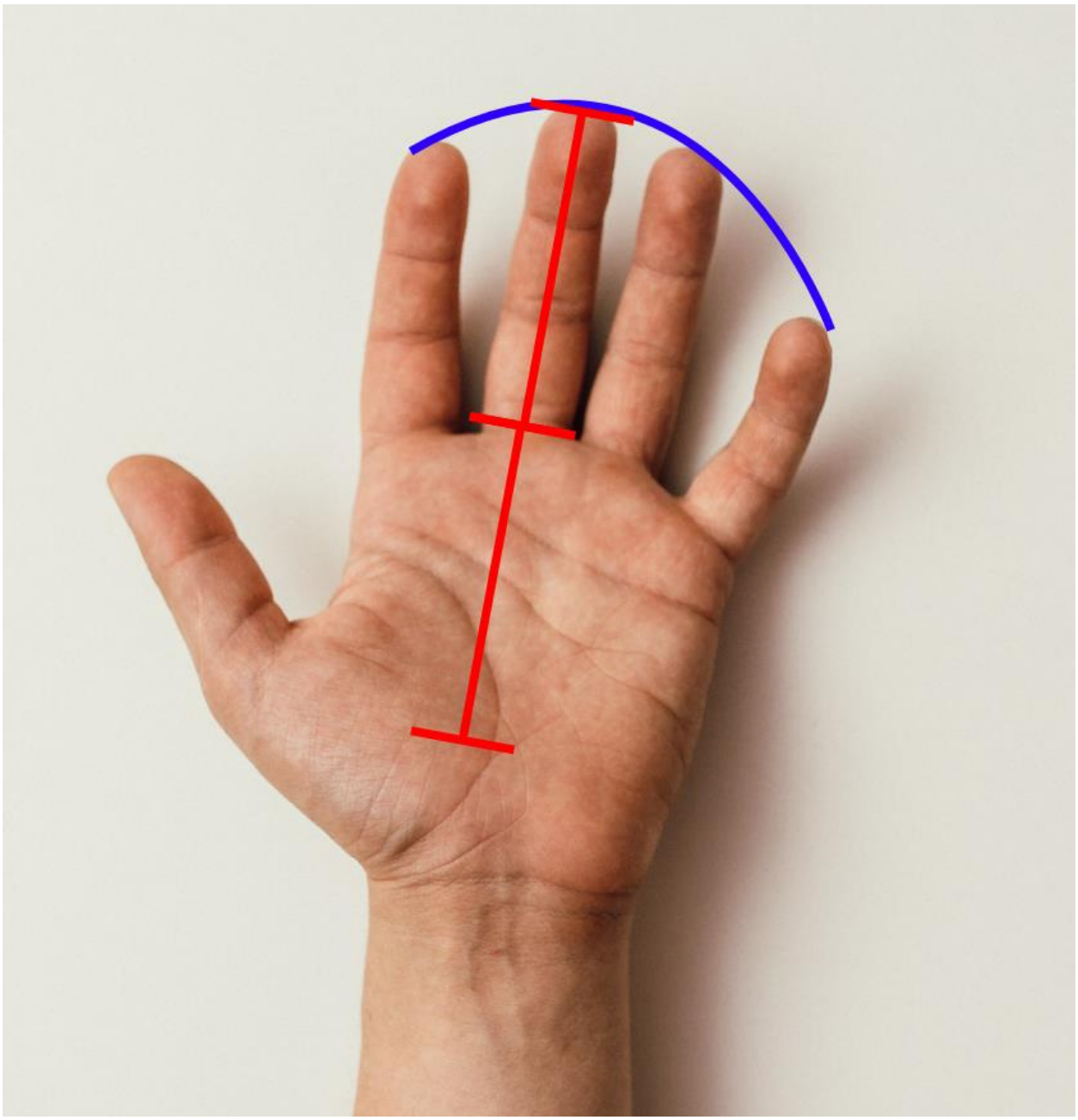


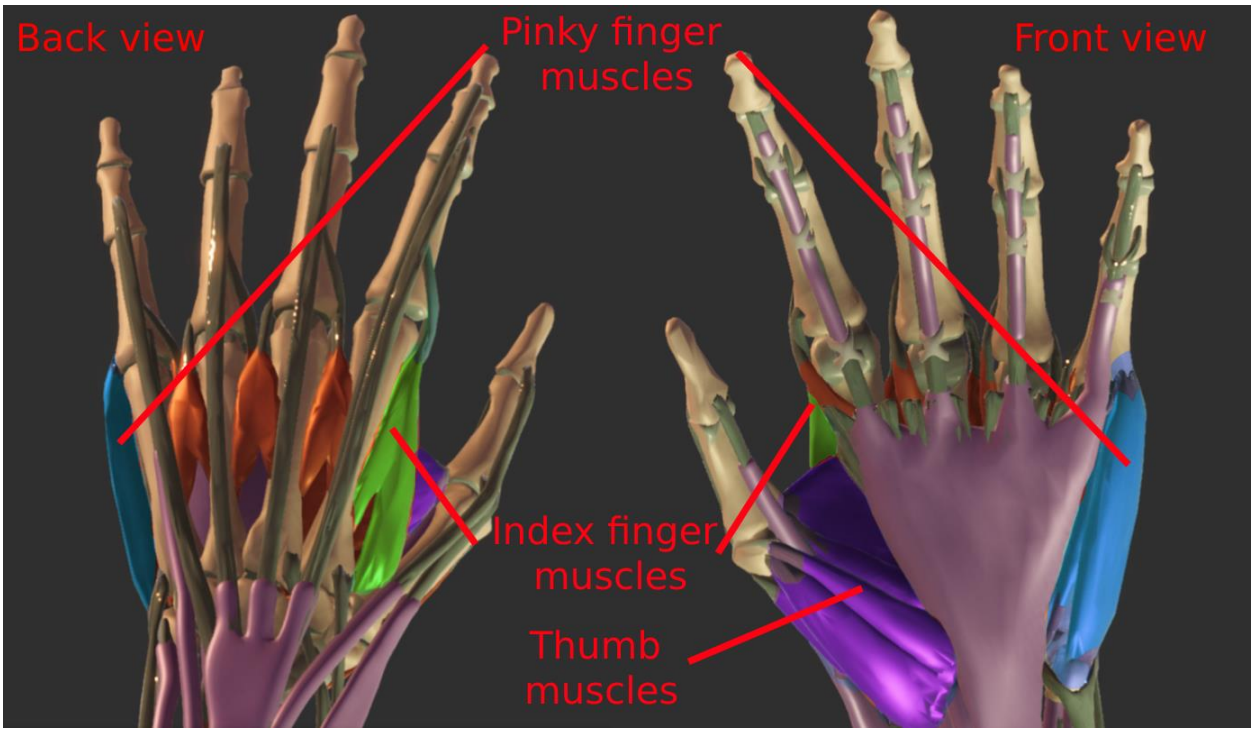

Left view
Front view
Right view
Back view

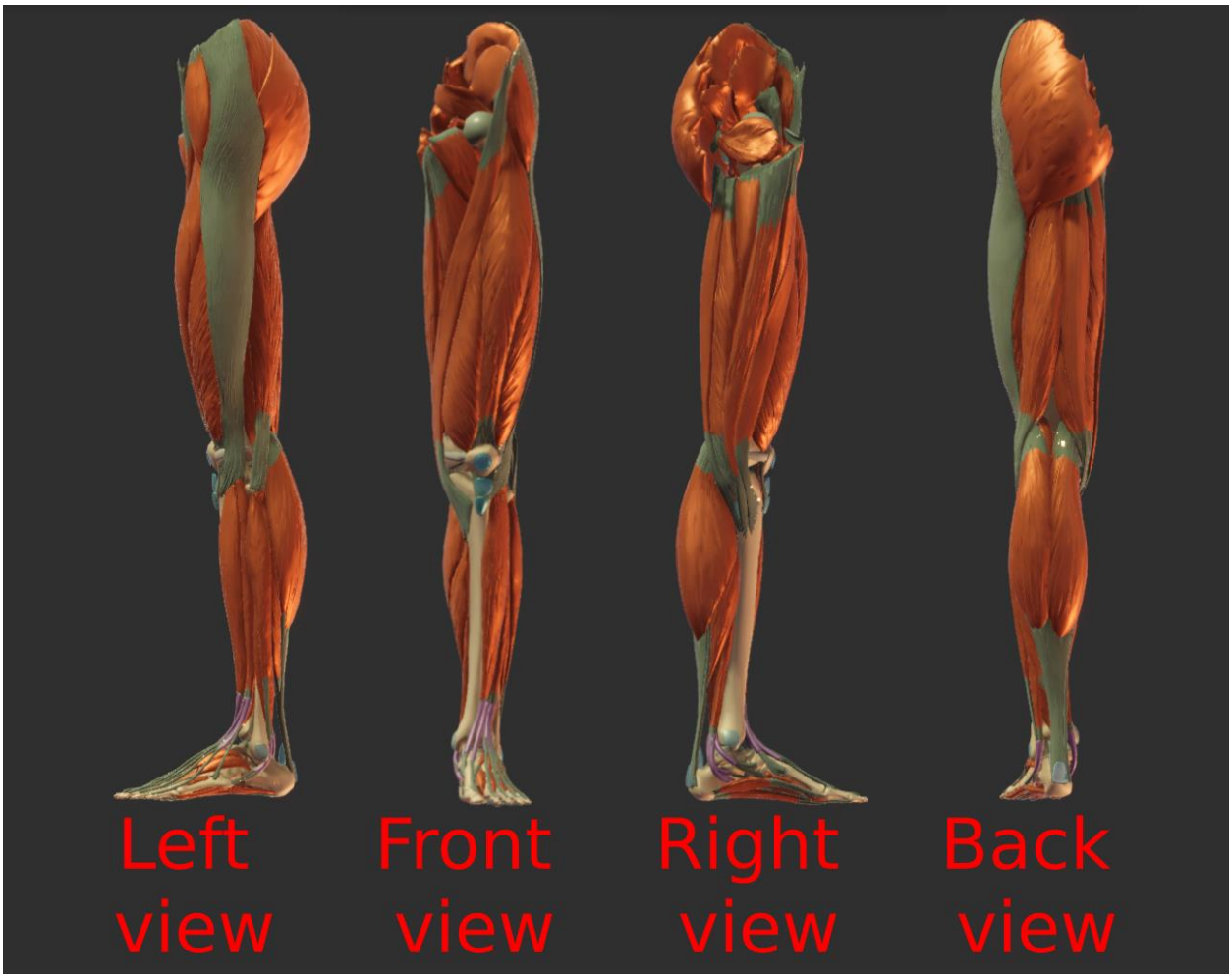

Deltoid
Biceps
Triceps
Brachioraidialis
Extensors
Flexors

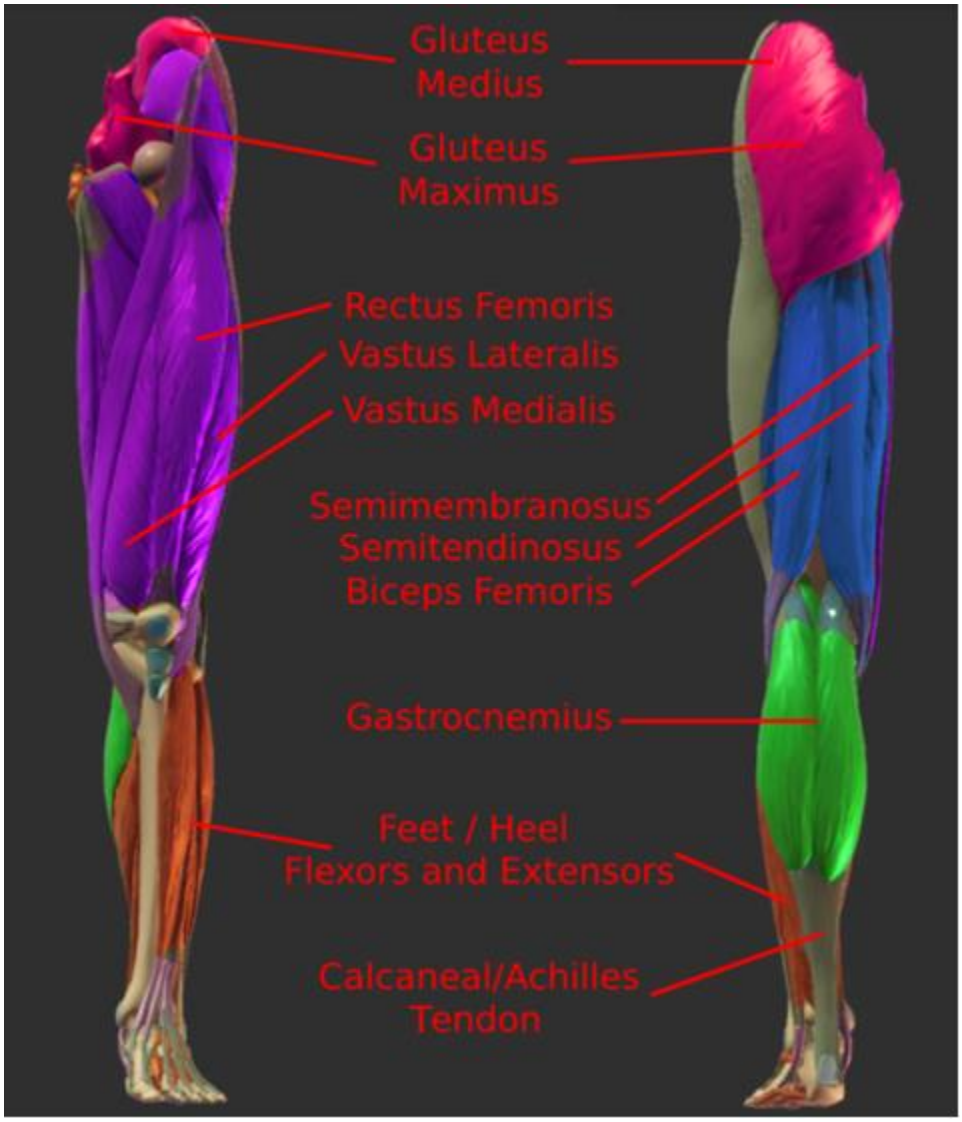

Flexor
muscles

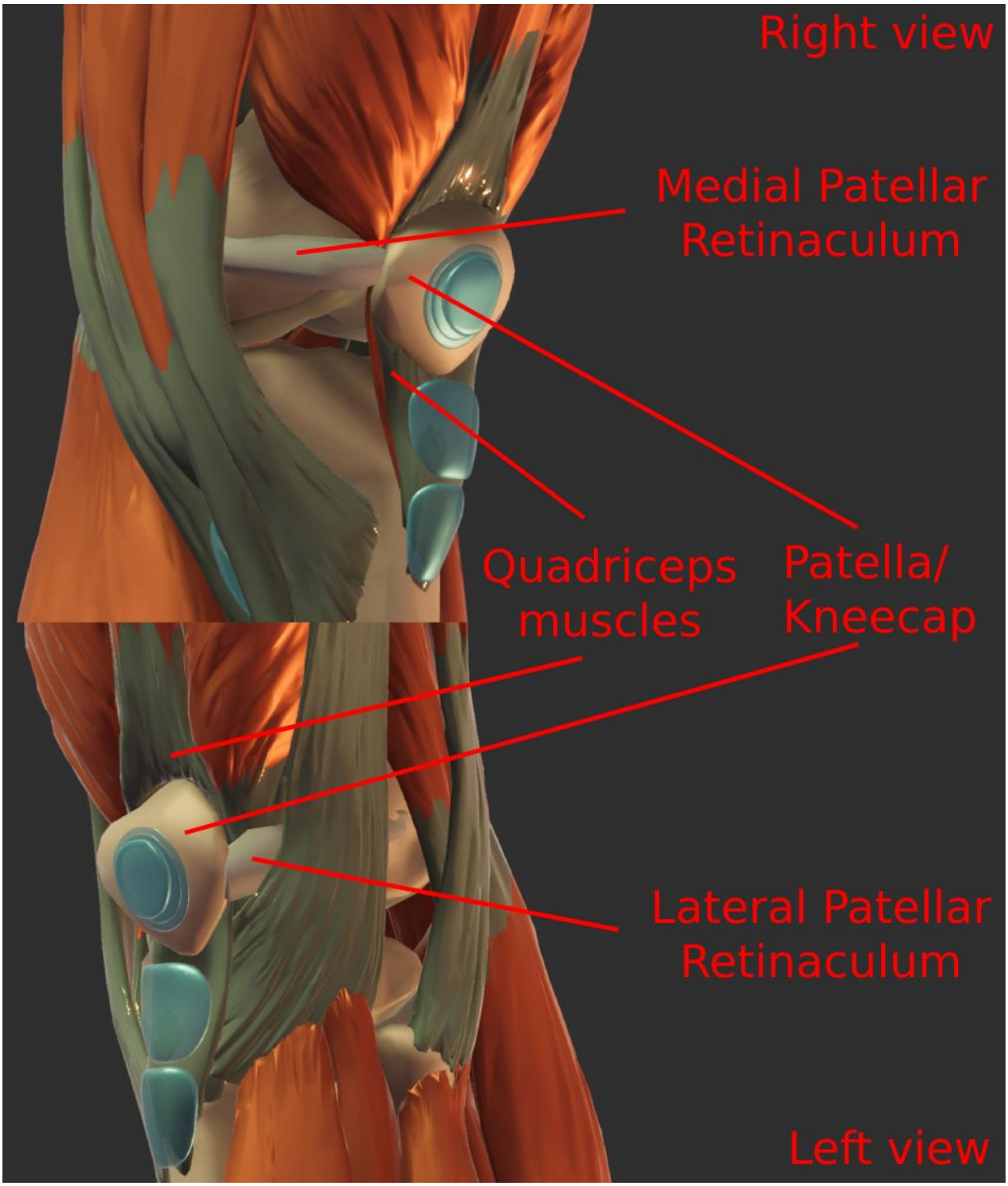

Front view
Back view

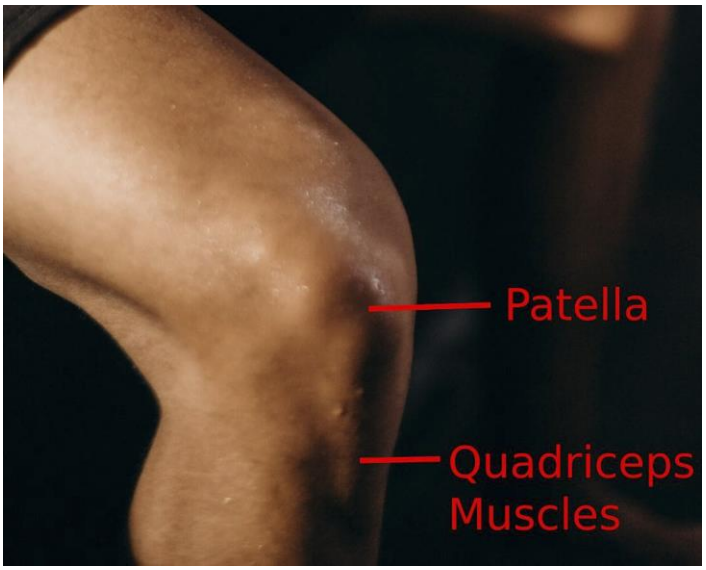



Back view
Pinky finger muscles
Front view
Index finger muscles
Thumb muscles

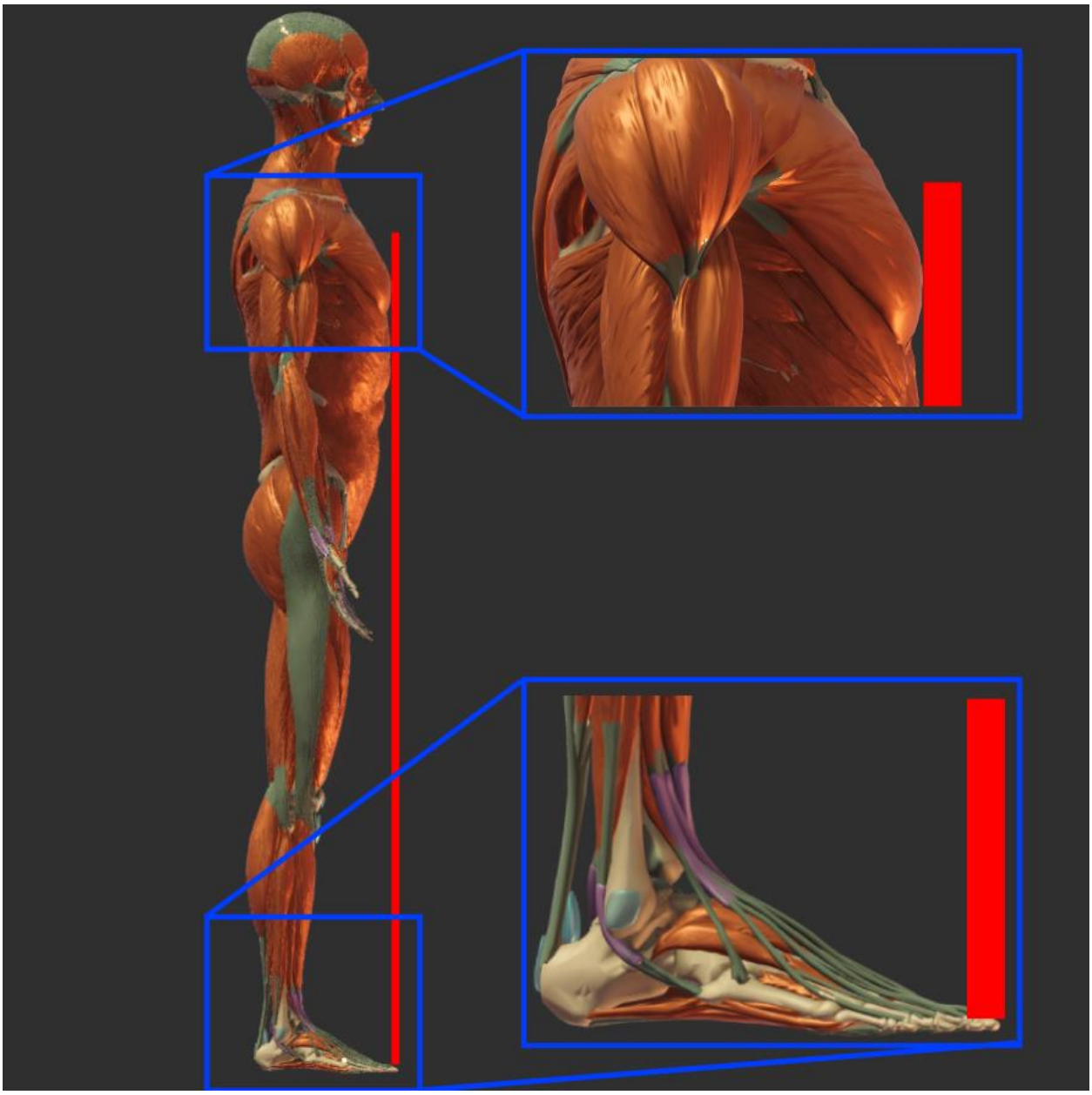

Left view
Front view
Right view
Back view

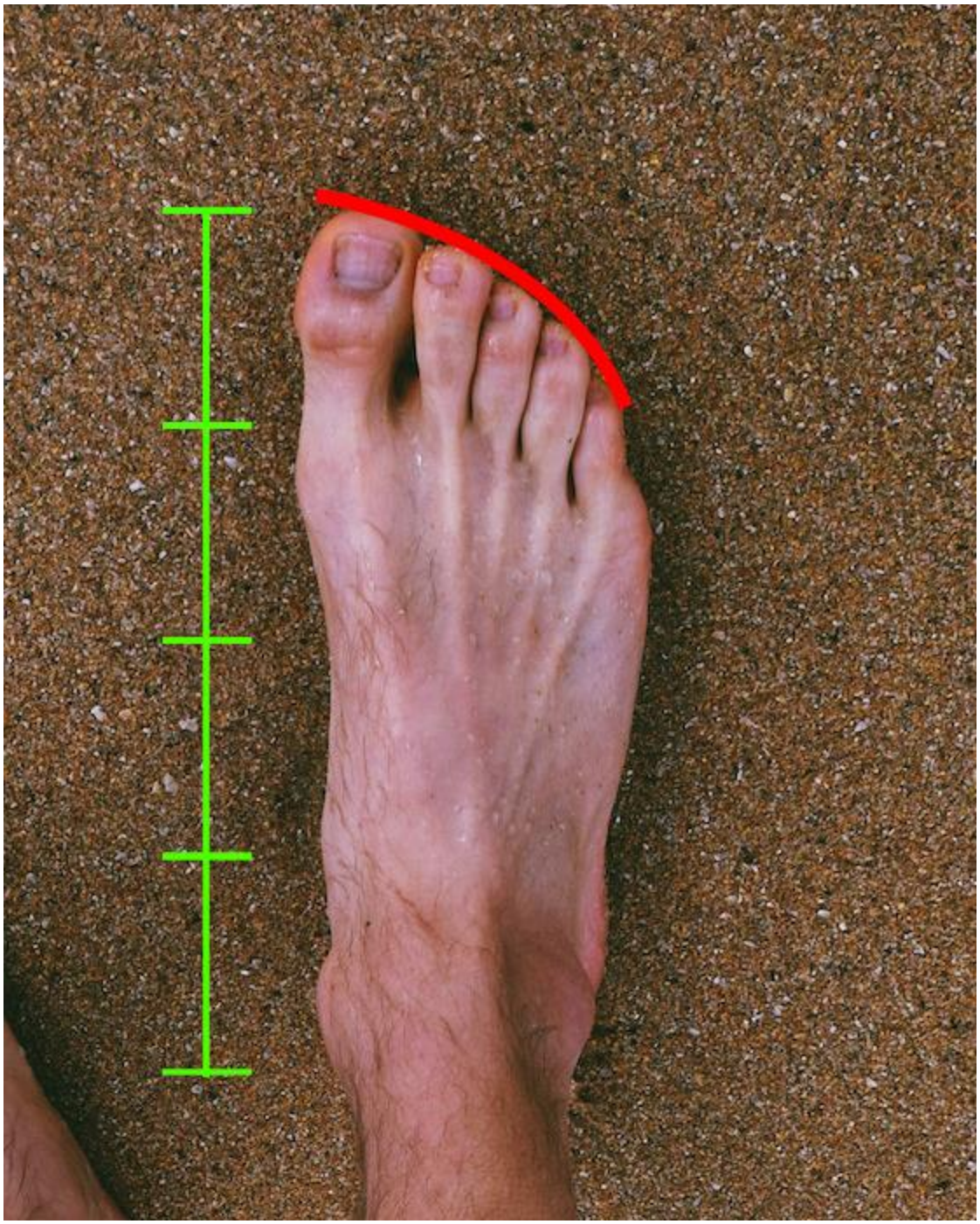

Gluteus Medius
Gluteus Maximus
Rectus Femoris
Vastus Lateralis
Vastus Medialis
Semimembranosus
Semitendinosus
Biceps Femoris
Gastrocnemius
Feet / Heel Flexors and Extensors
Calcaneal/Achilles Tendon

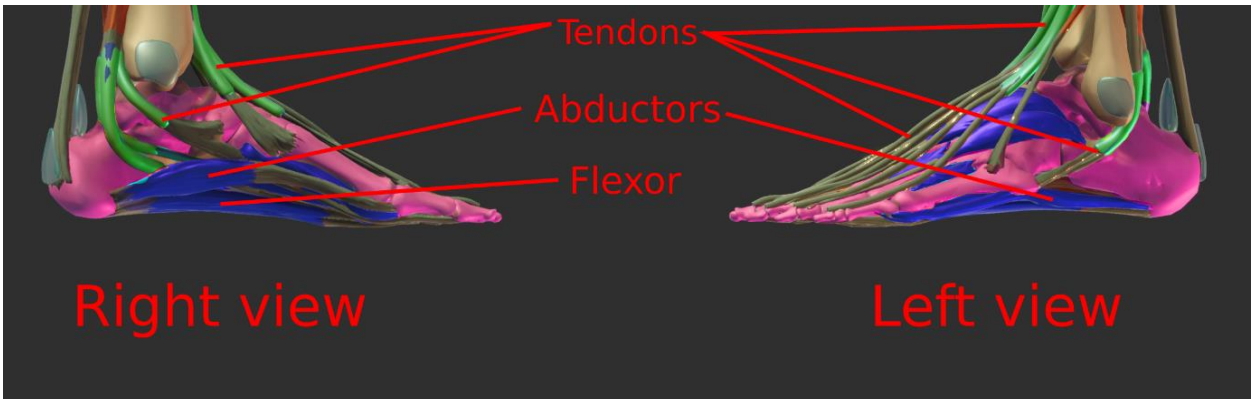

Right view
Medial Patellar Retinaculum
Quadriceps muscles
Patella/ Kneecap
Lateral Patellar Retinaculum
Left view

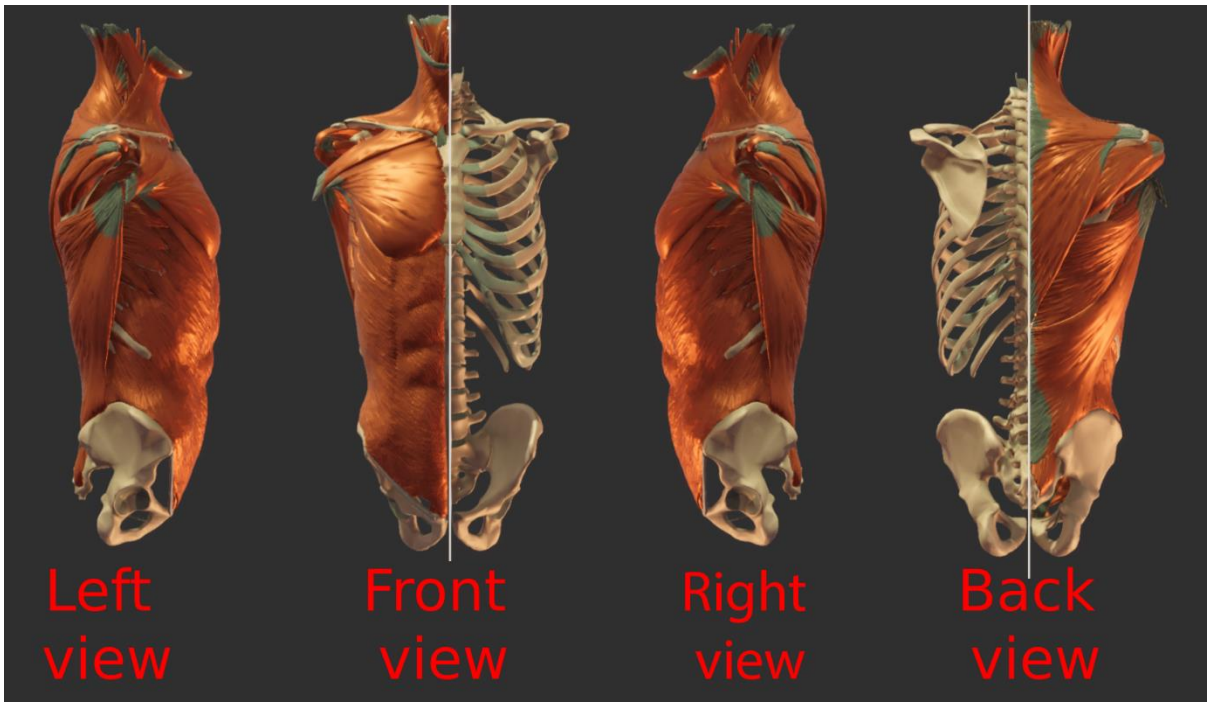

Patella
Quadriceps
Muscles

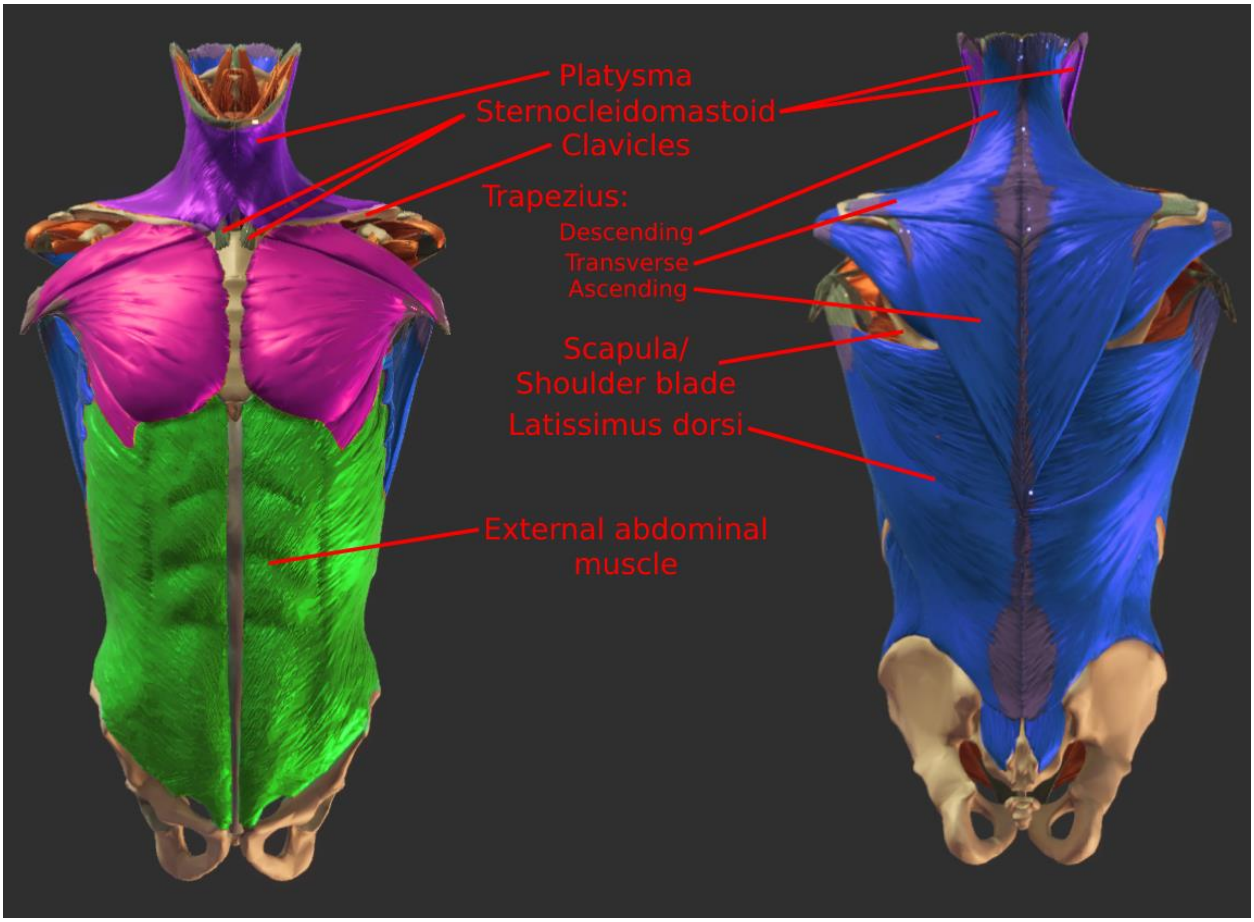
Left
view
Front
view
Right
view
Back
view

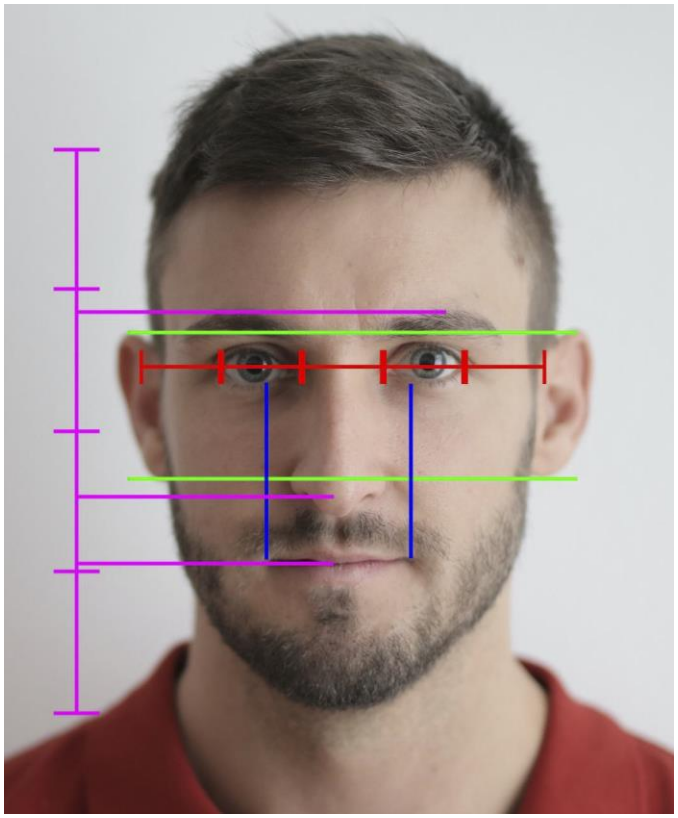


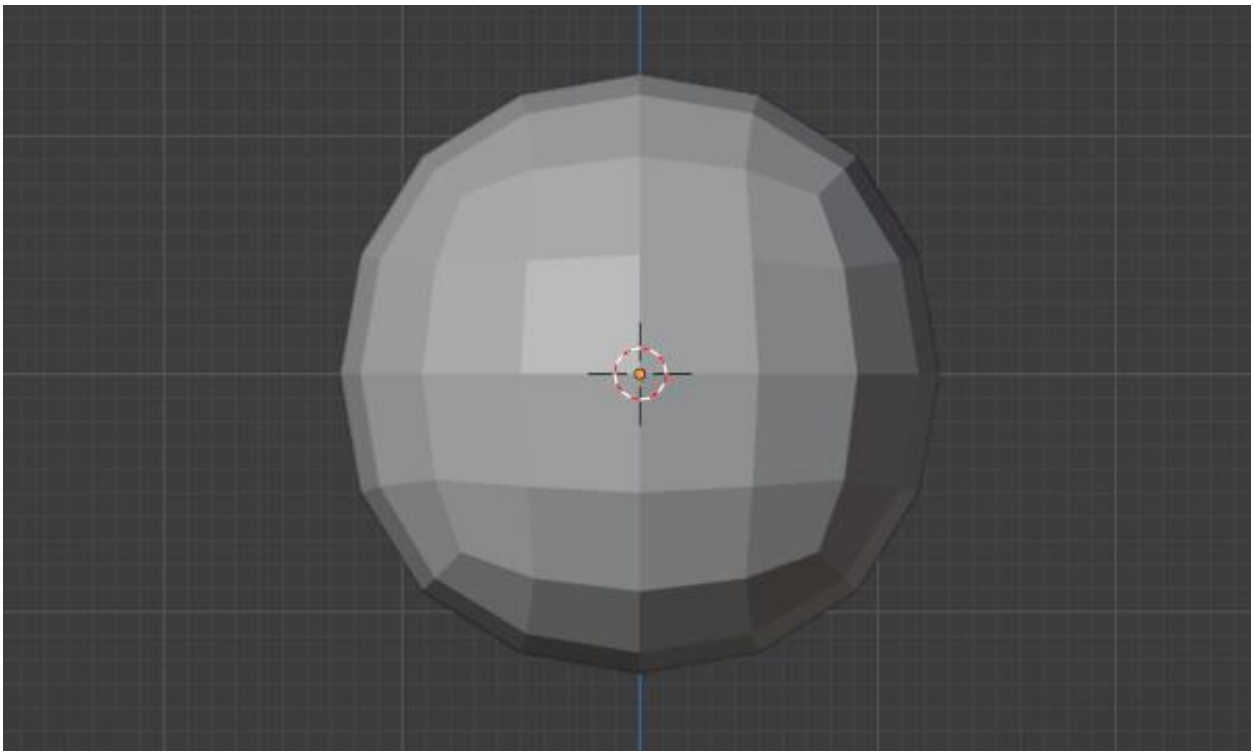


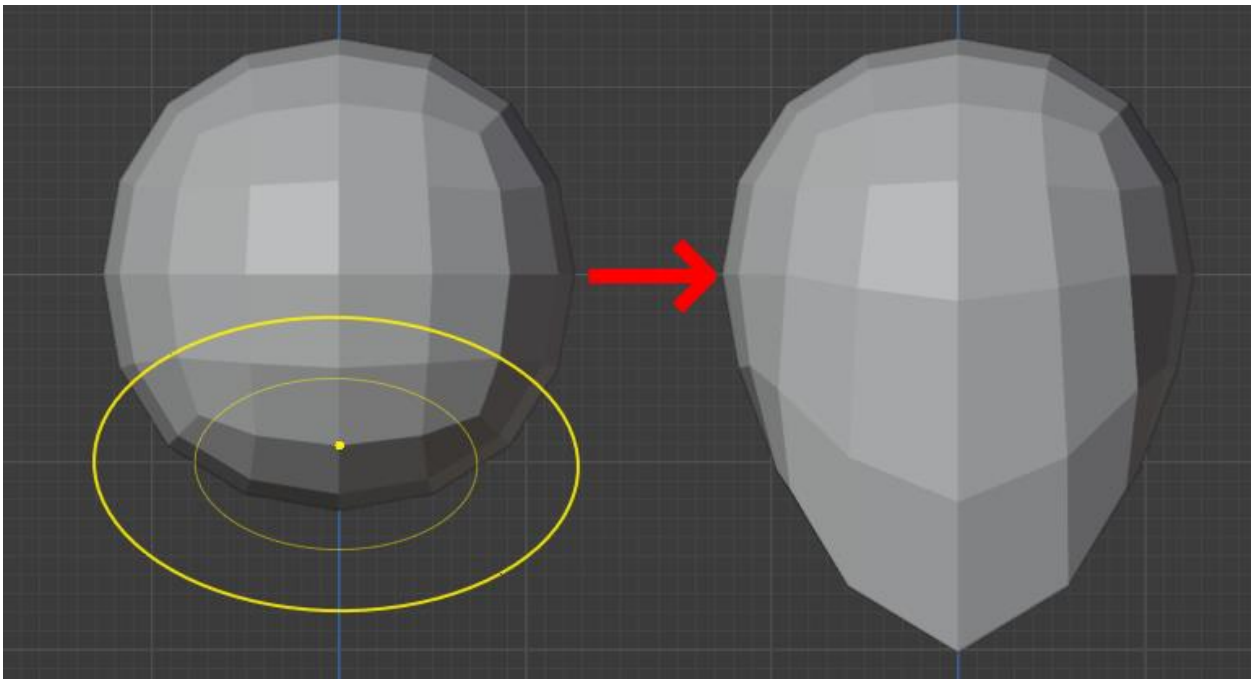

Tendons
Abductors
Flexor
Right view
Left view

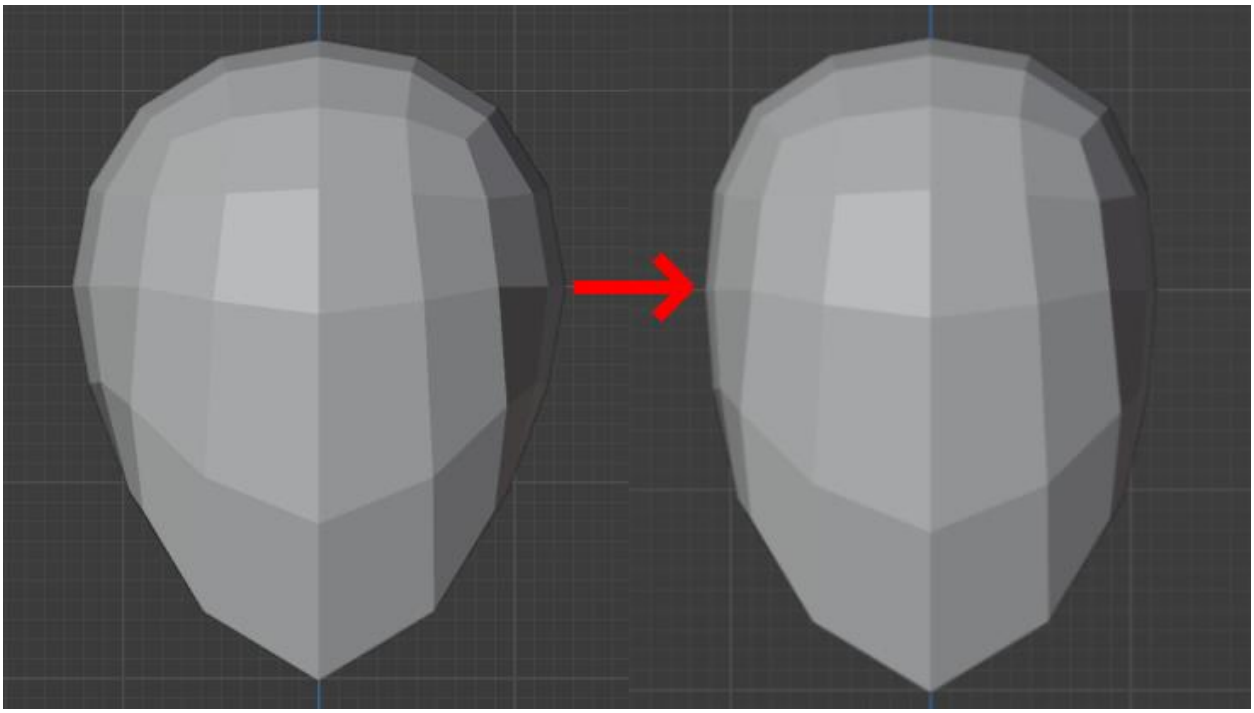

Left view
Front view
Right view
Back view

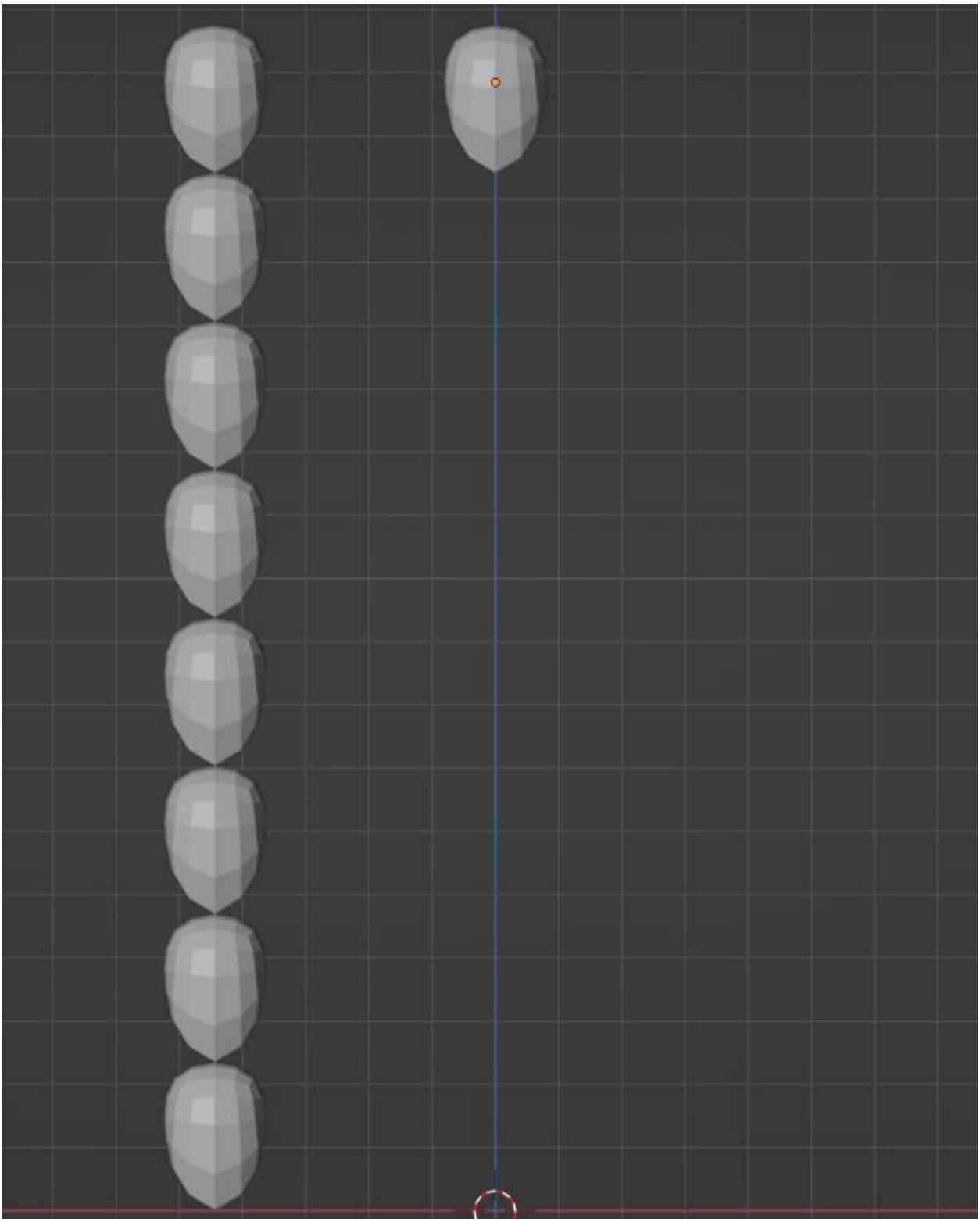

Platysma
Sternocleidomastoid
Clavicles
Trapezius:
Descending
Transverse
Ascending
Scapula/
Shoulder blade
Latissimus dorsi
External abdominal
muscle

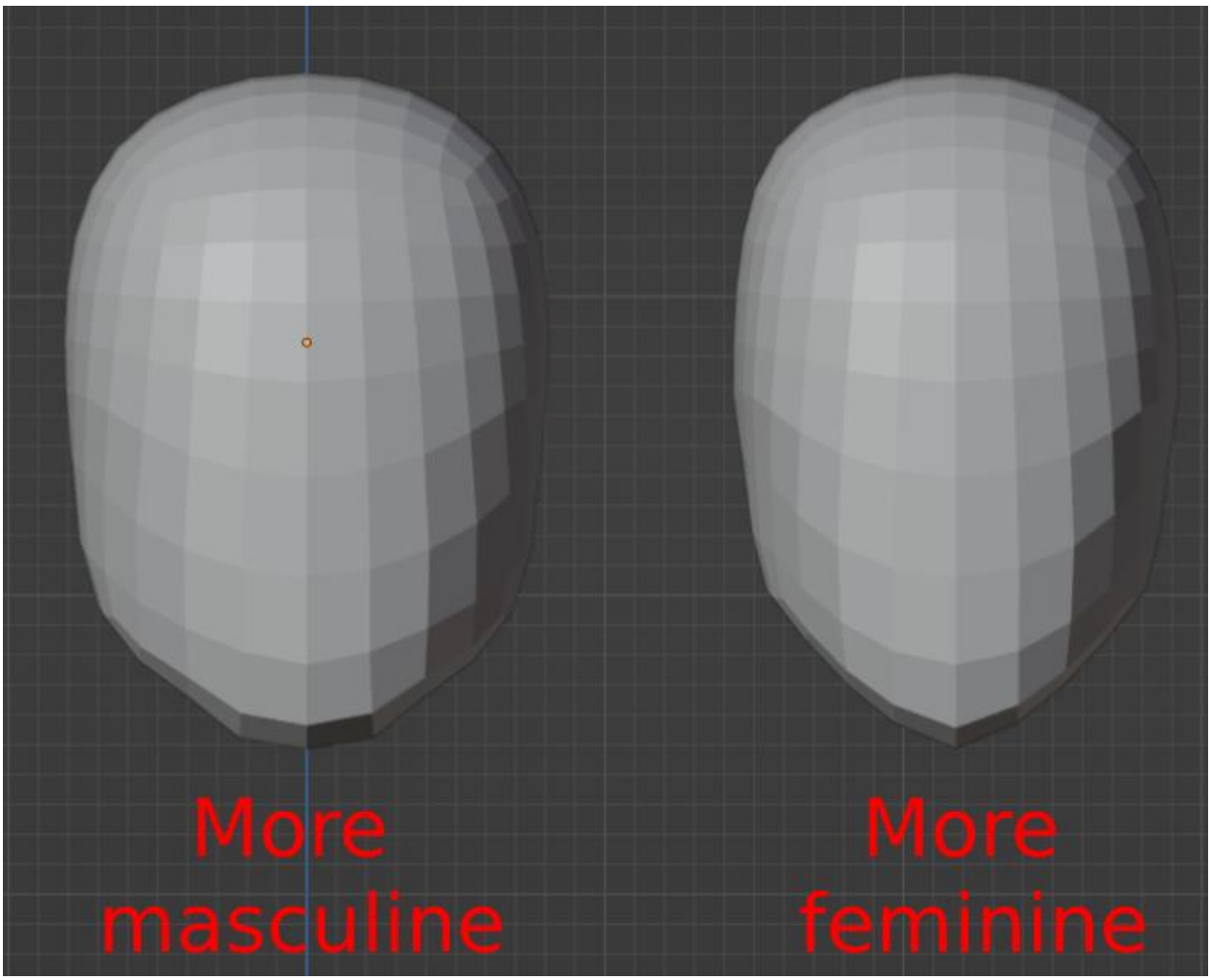


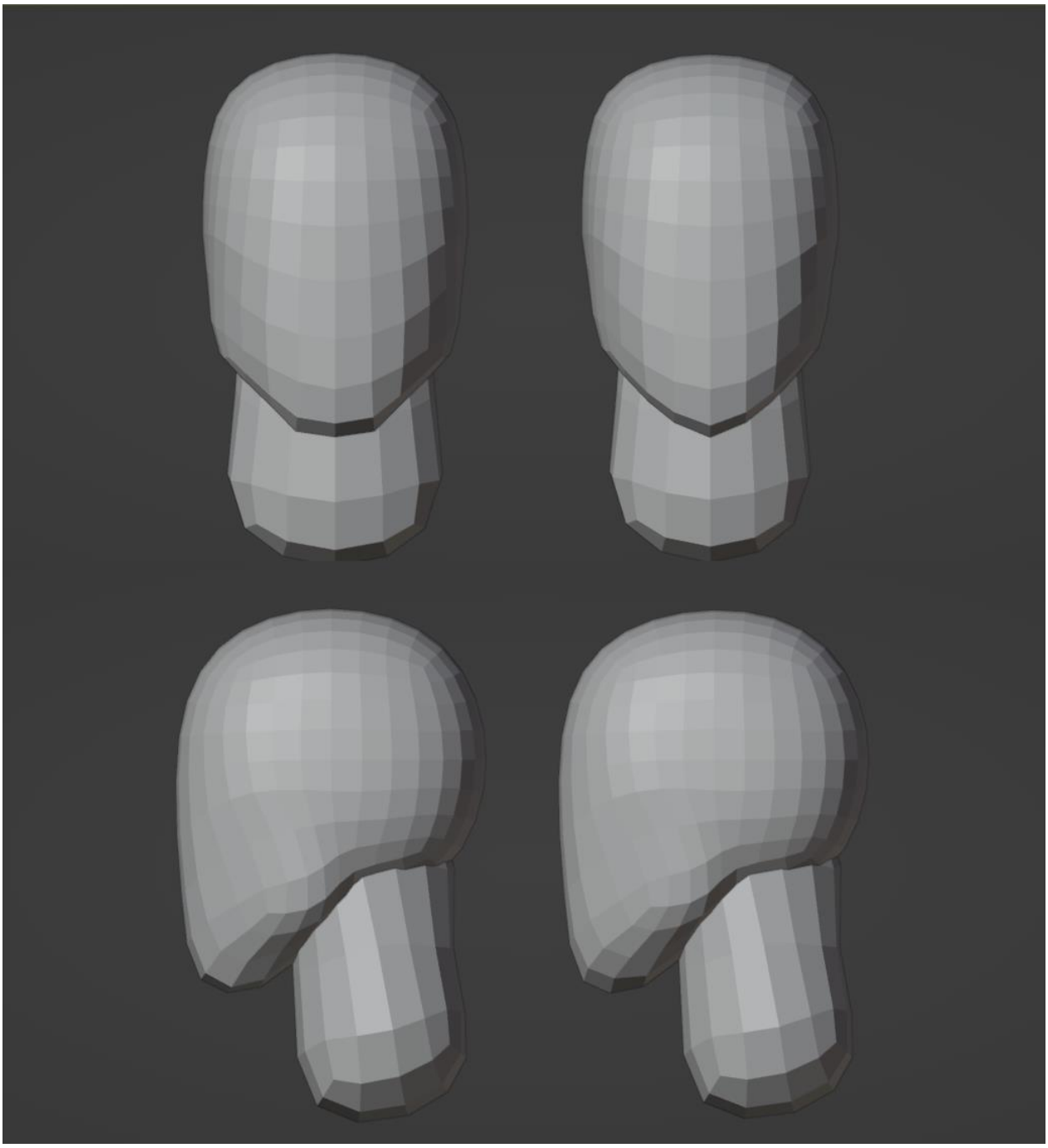


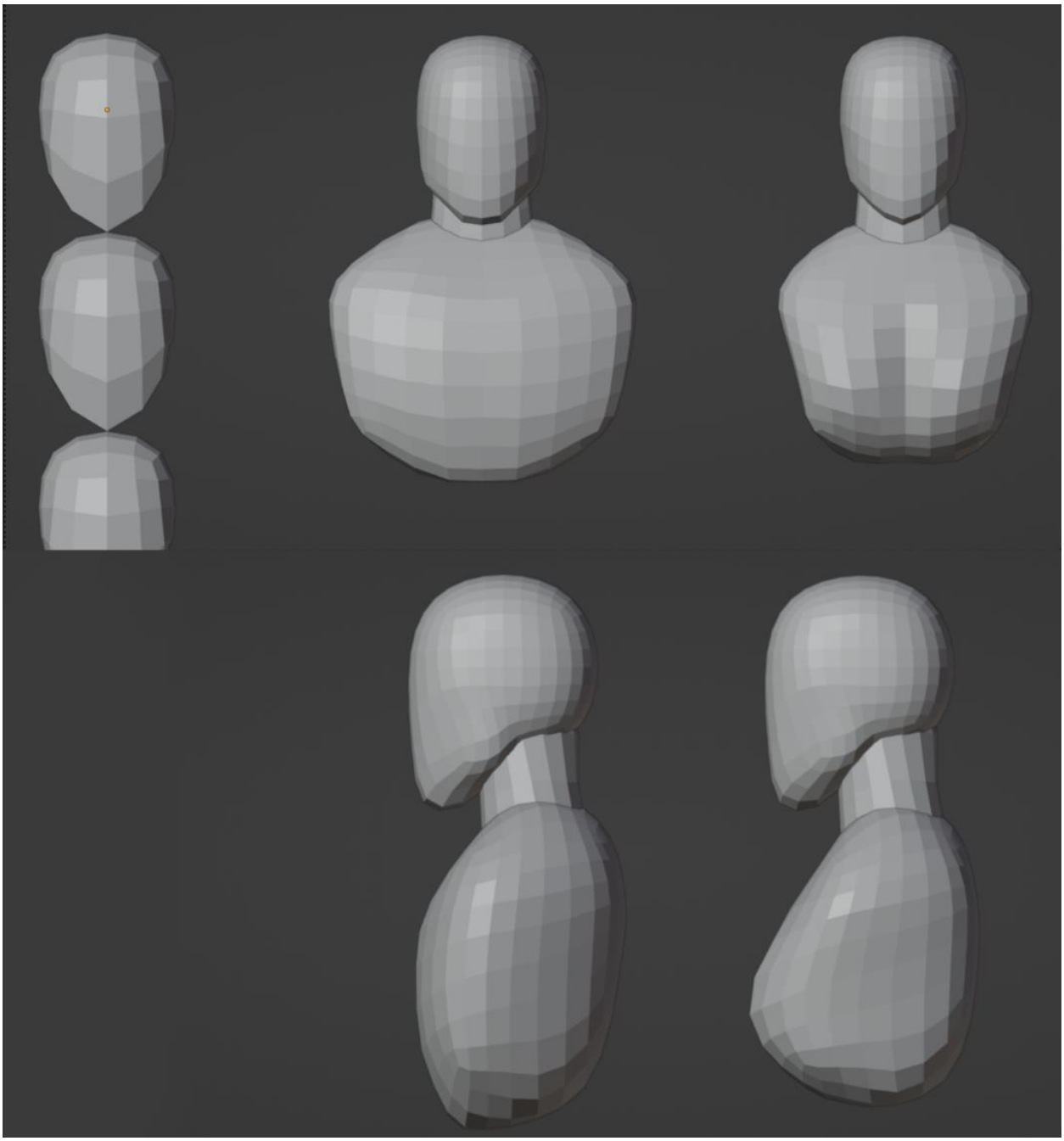


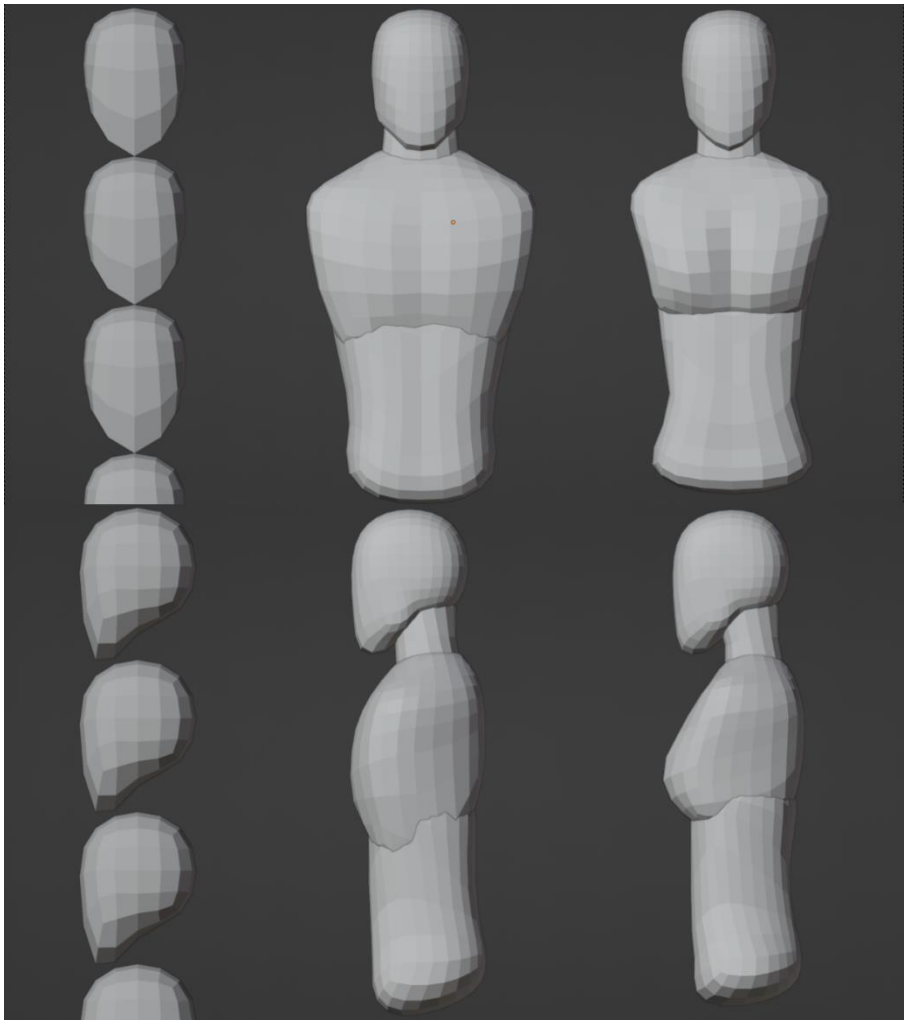


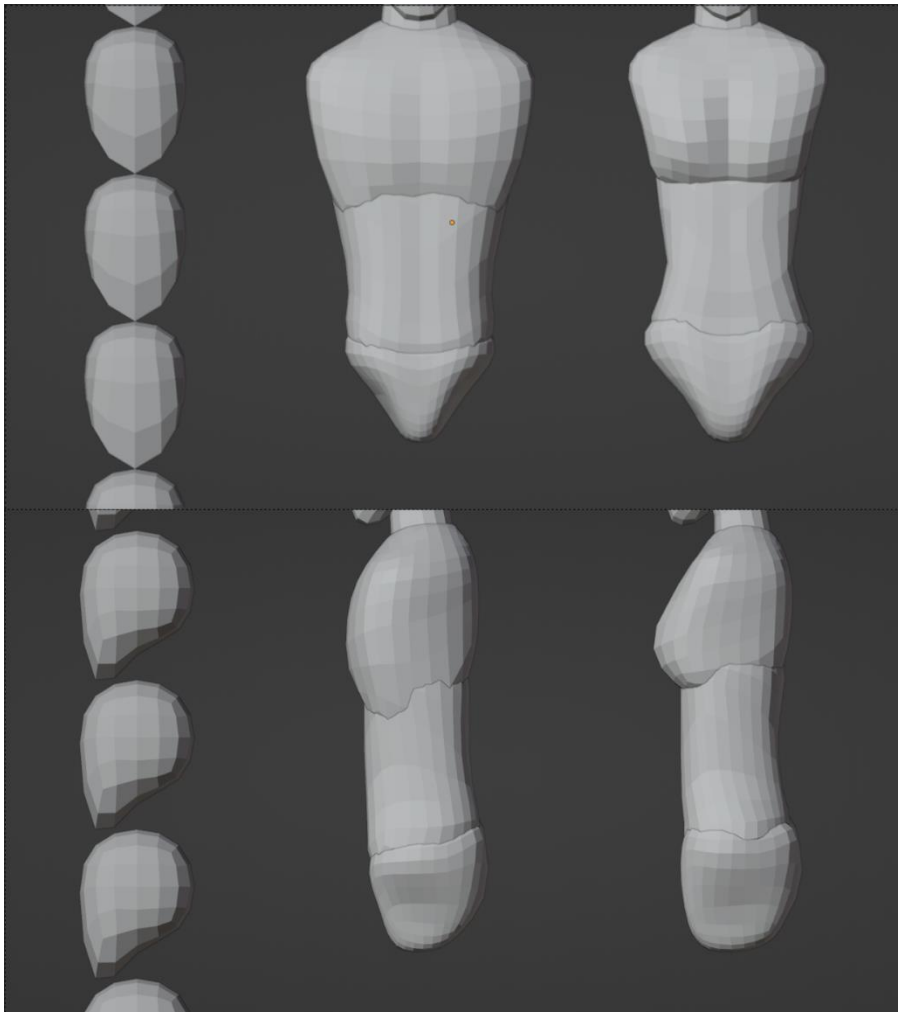


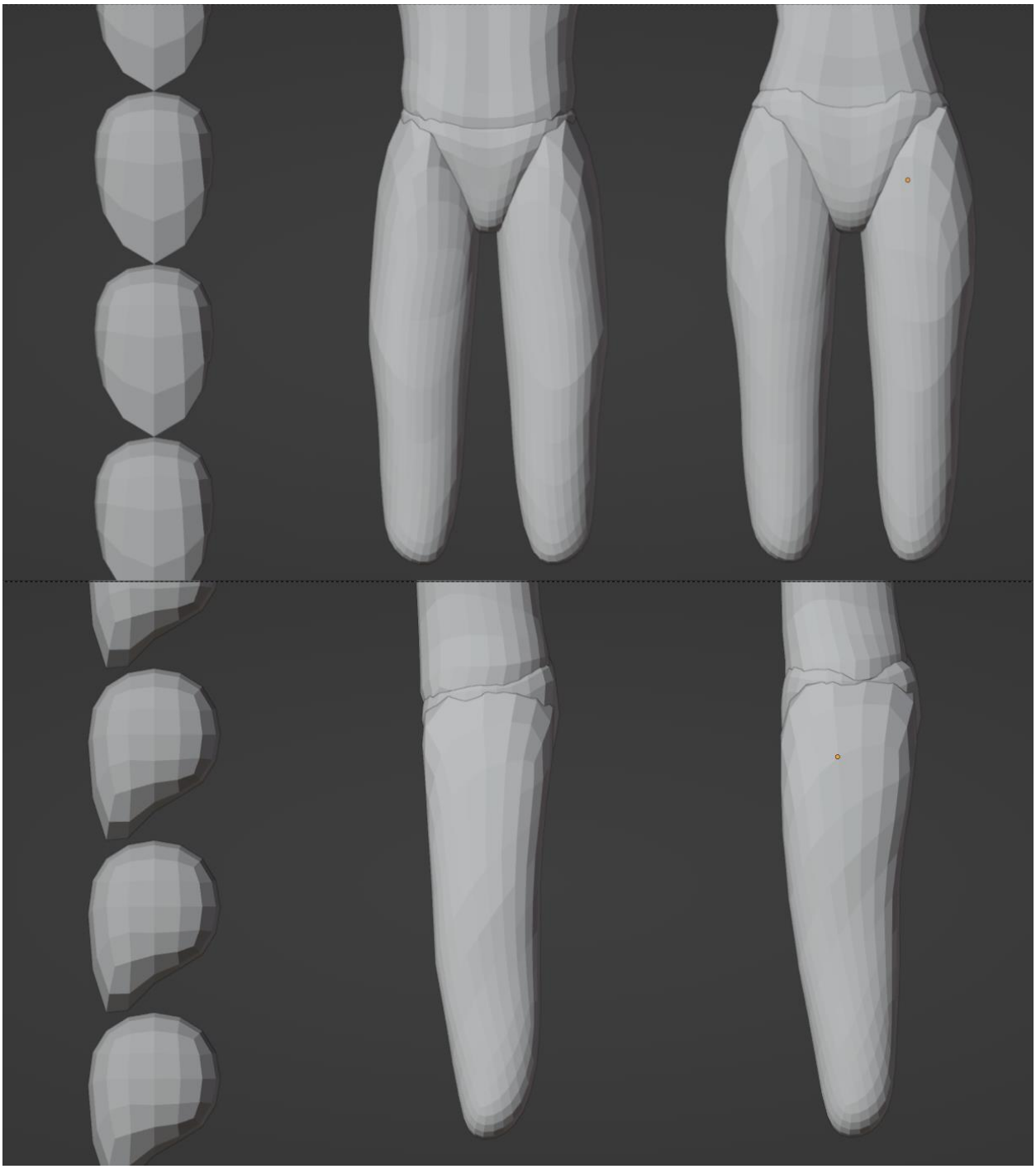

More
masculine
More
feminine

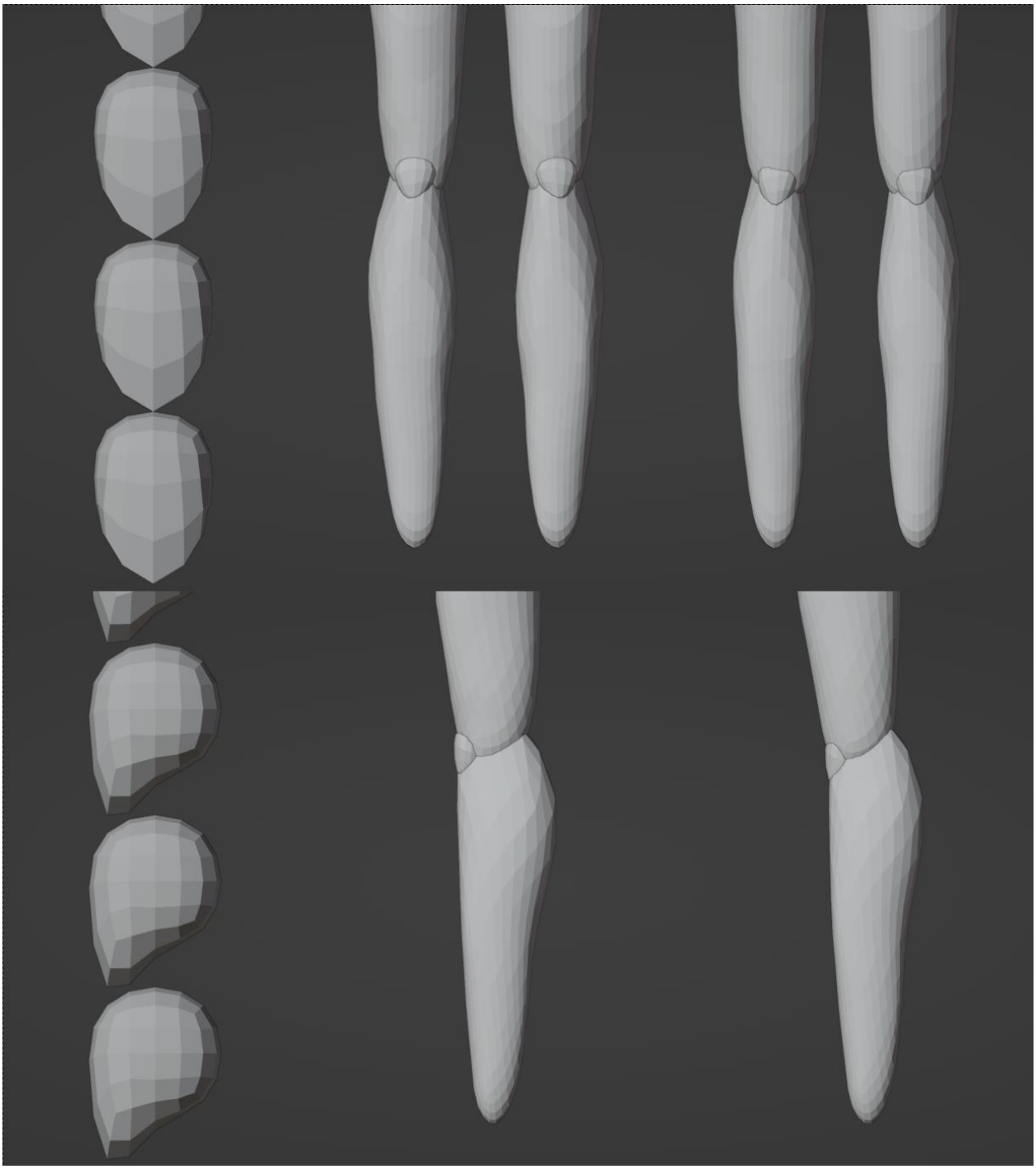


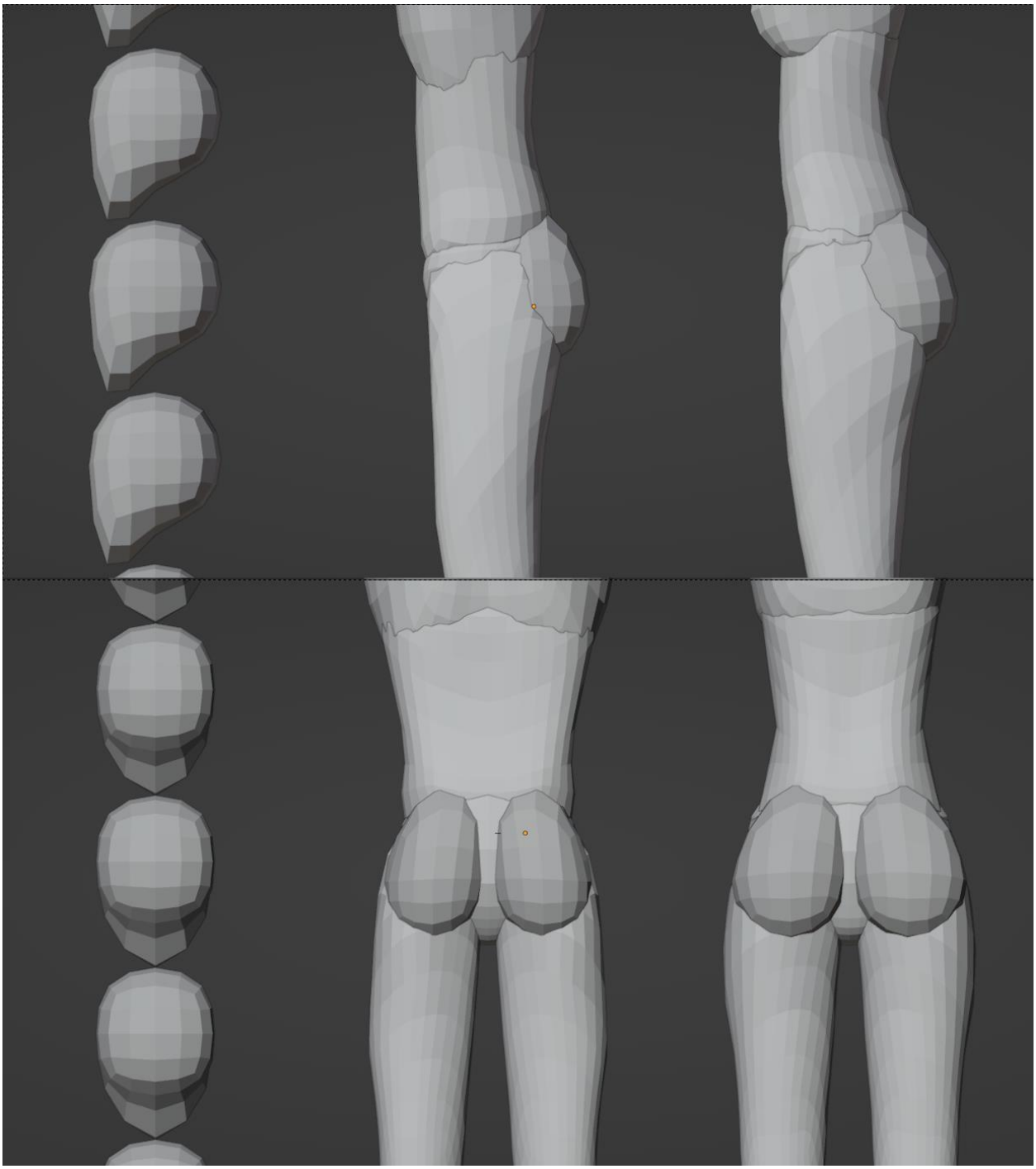


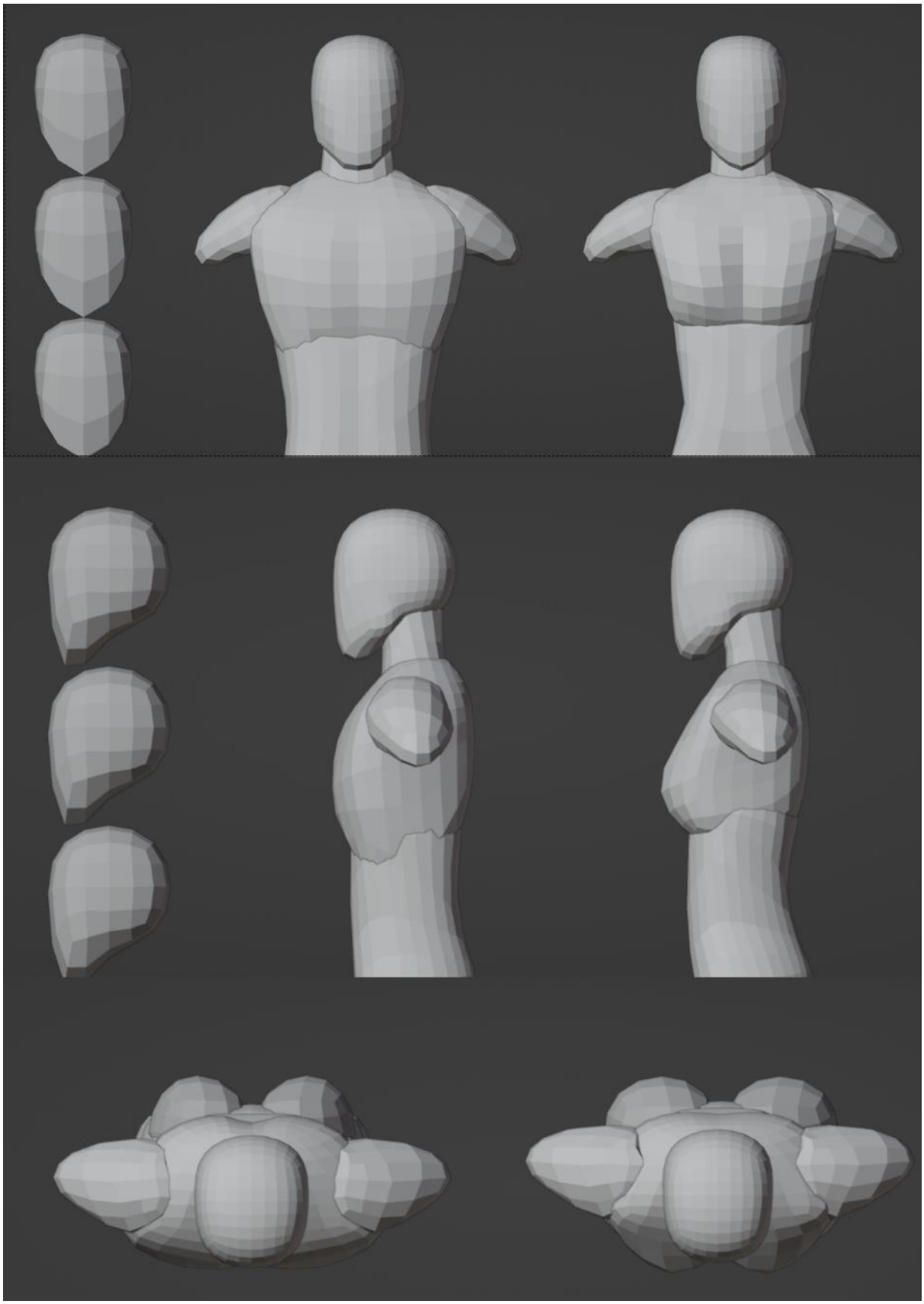


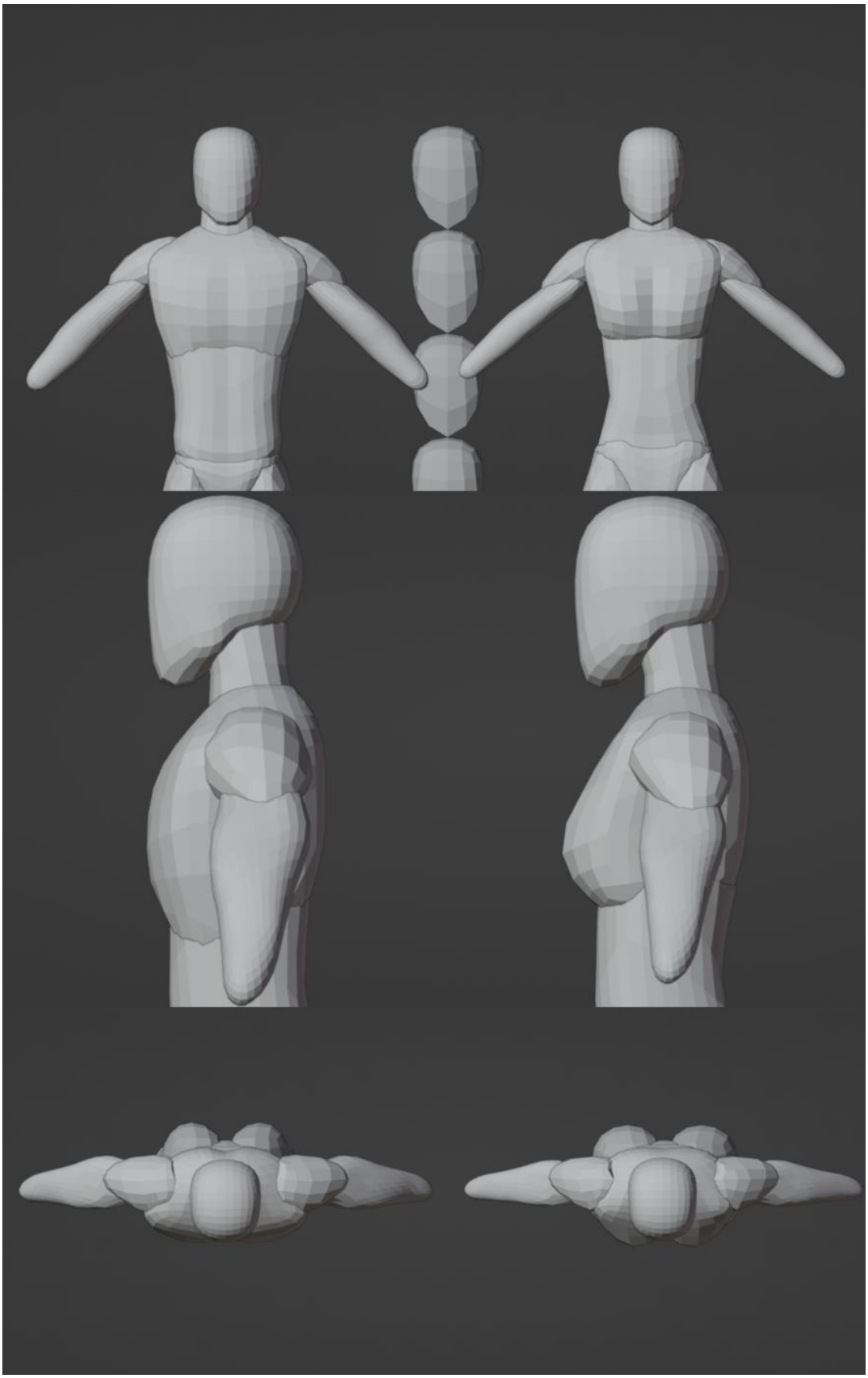


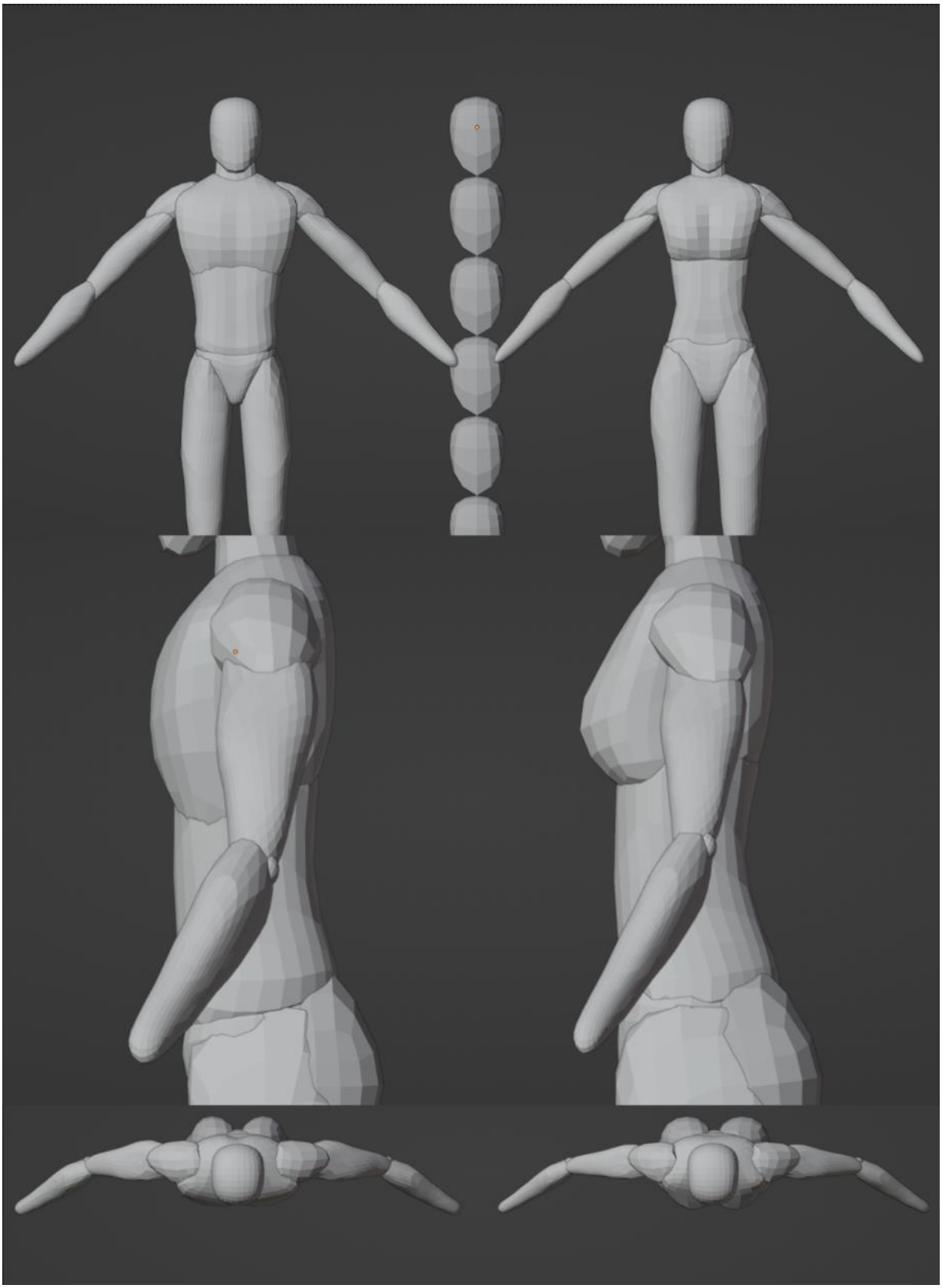


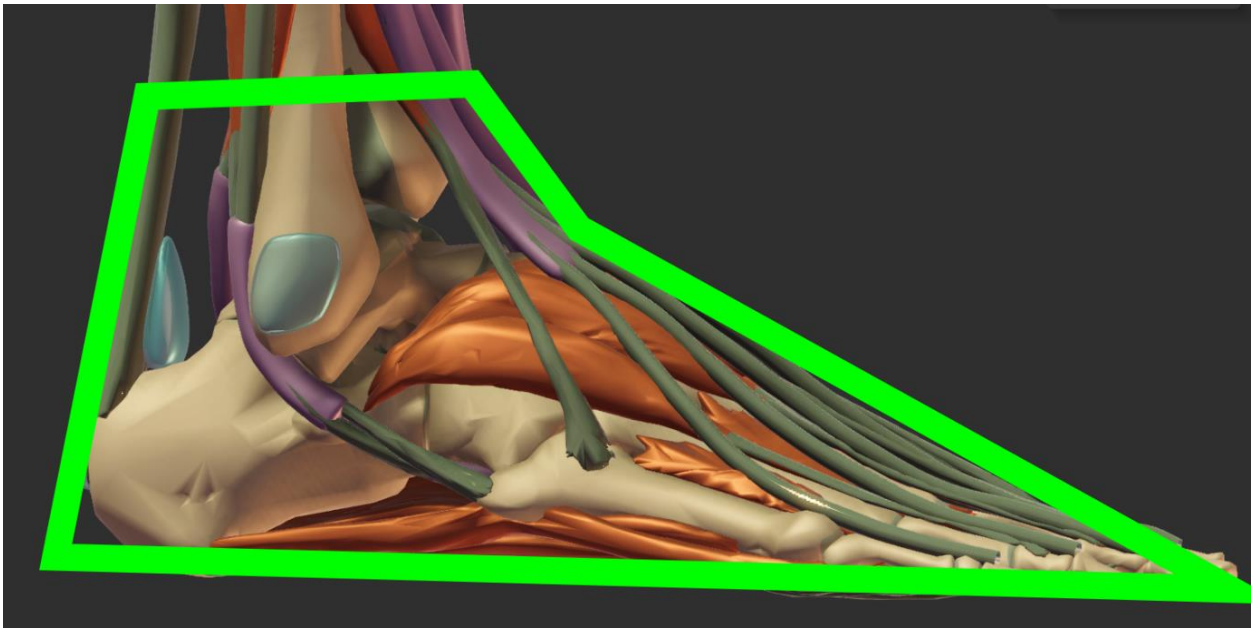


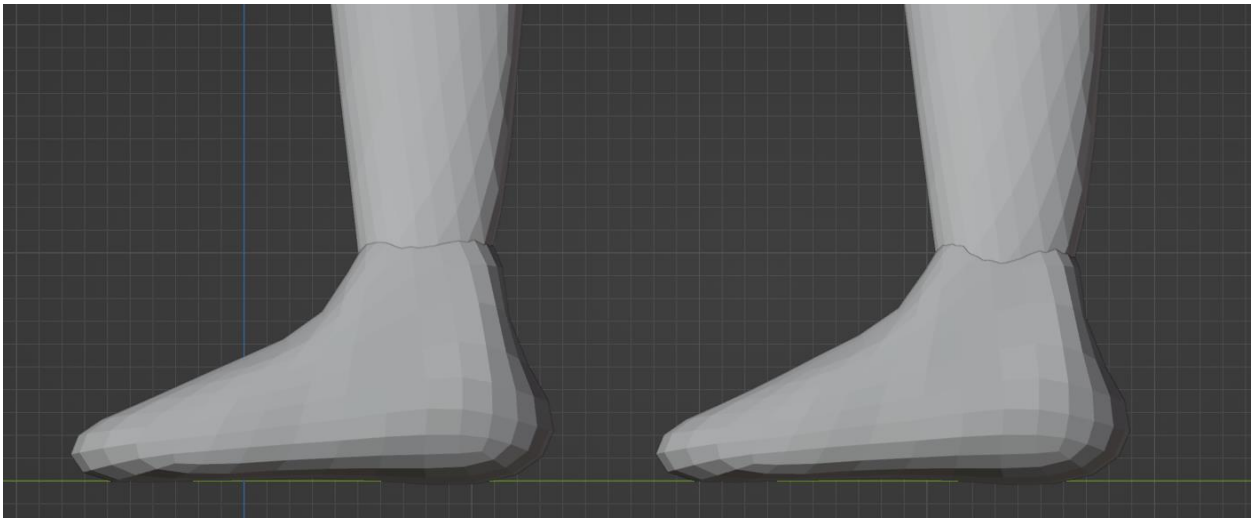


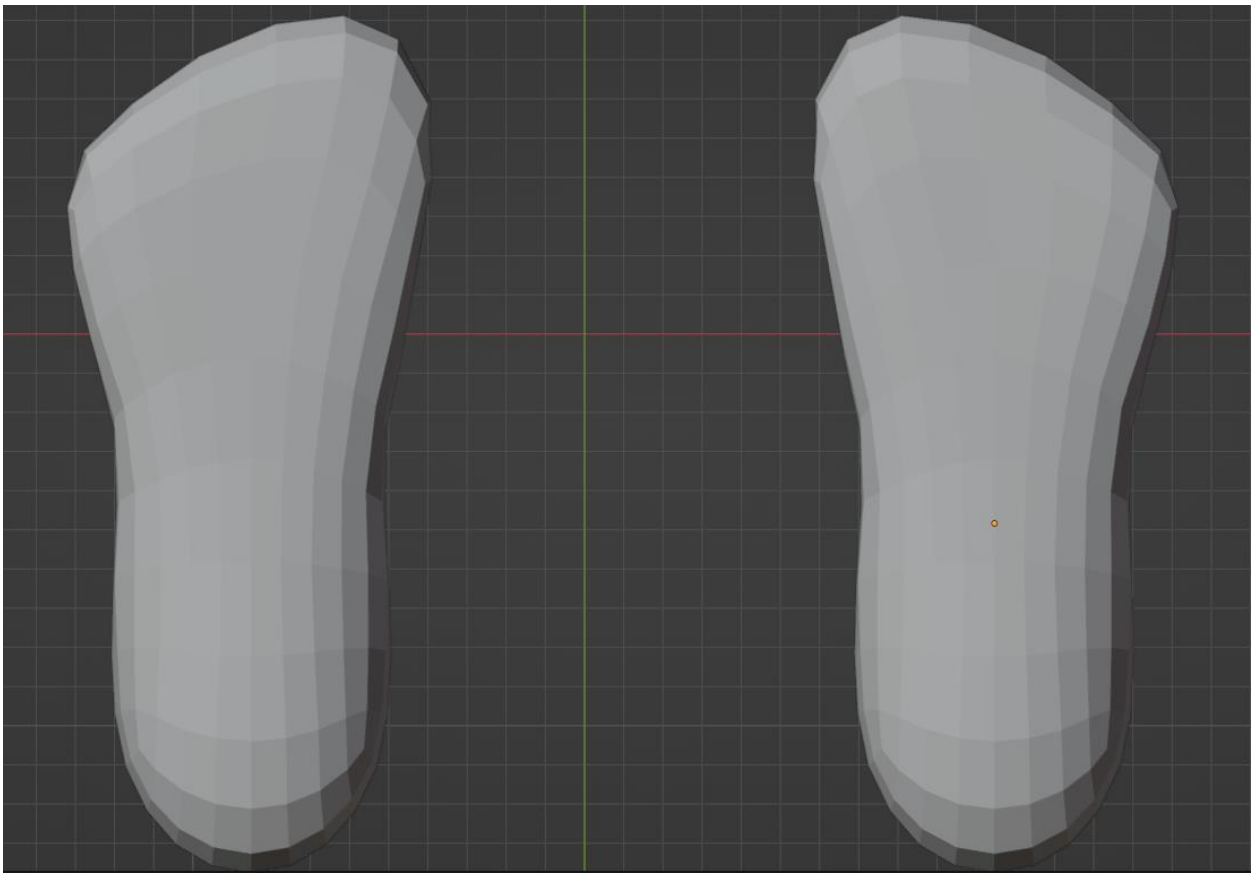


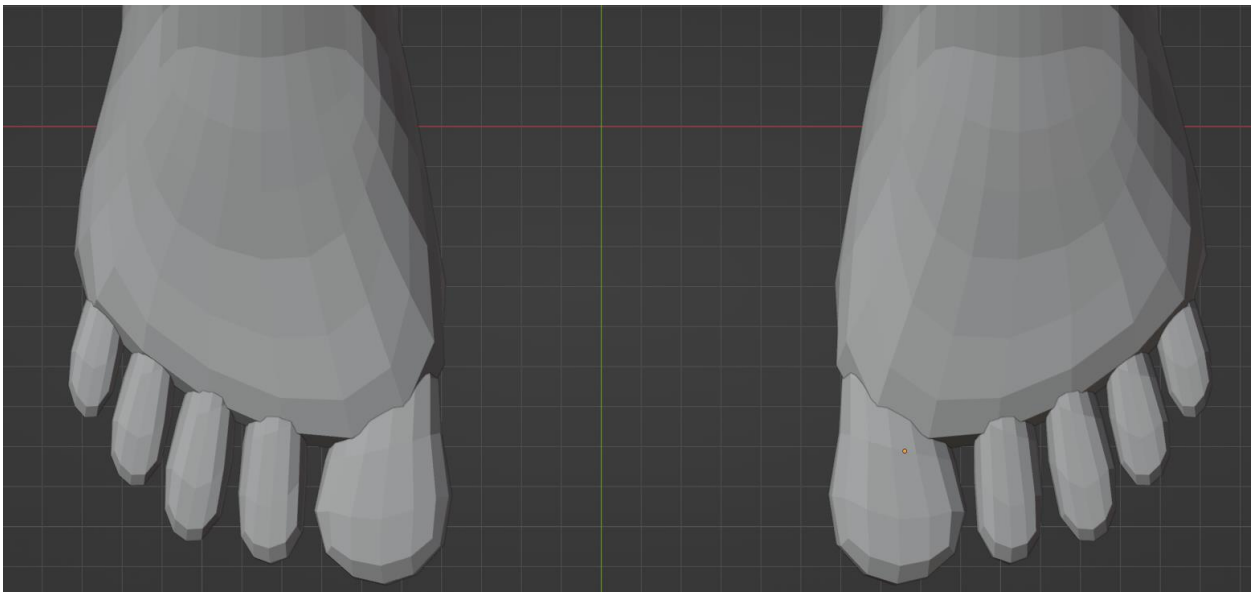


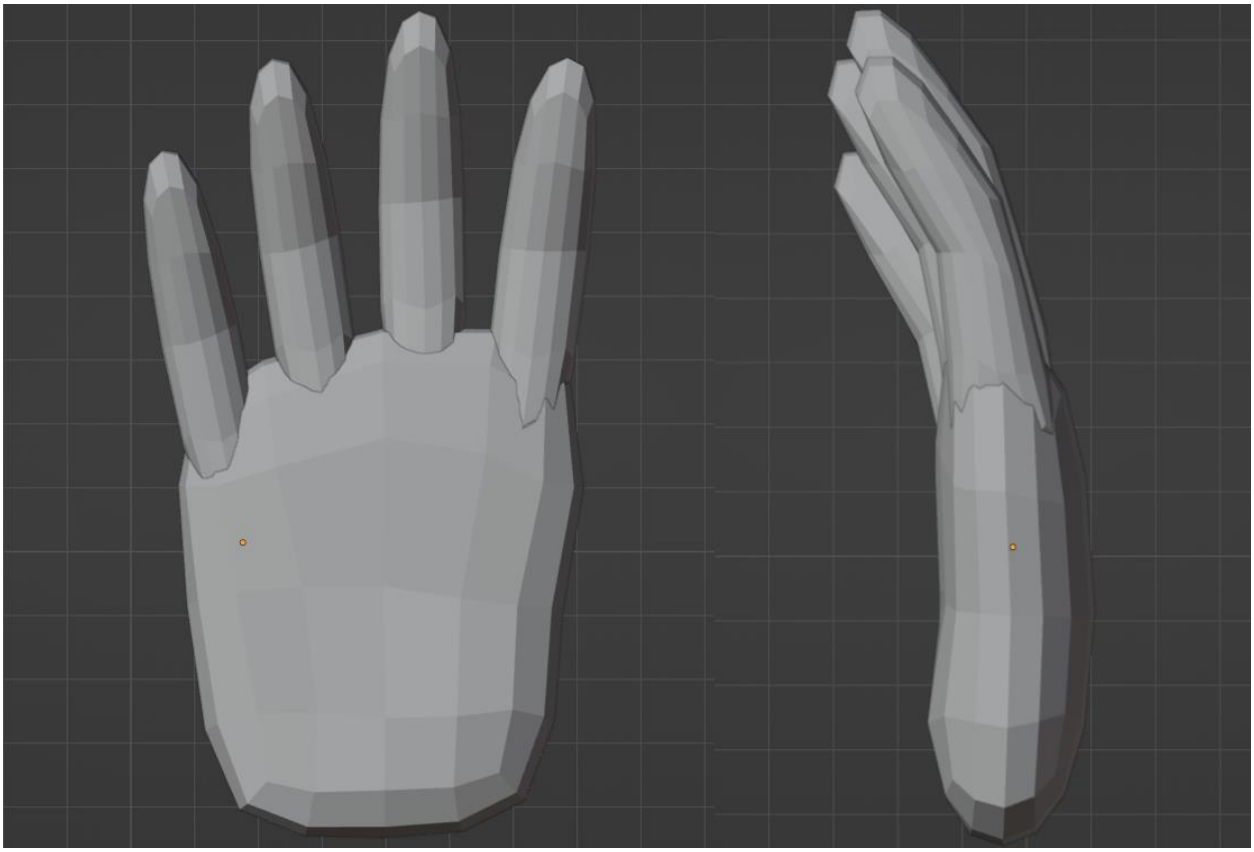


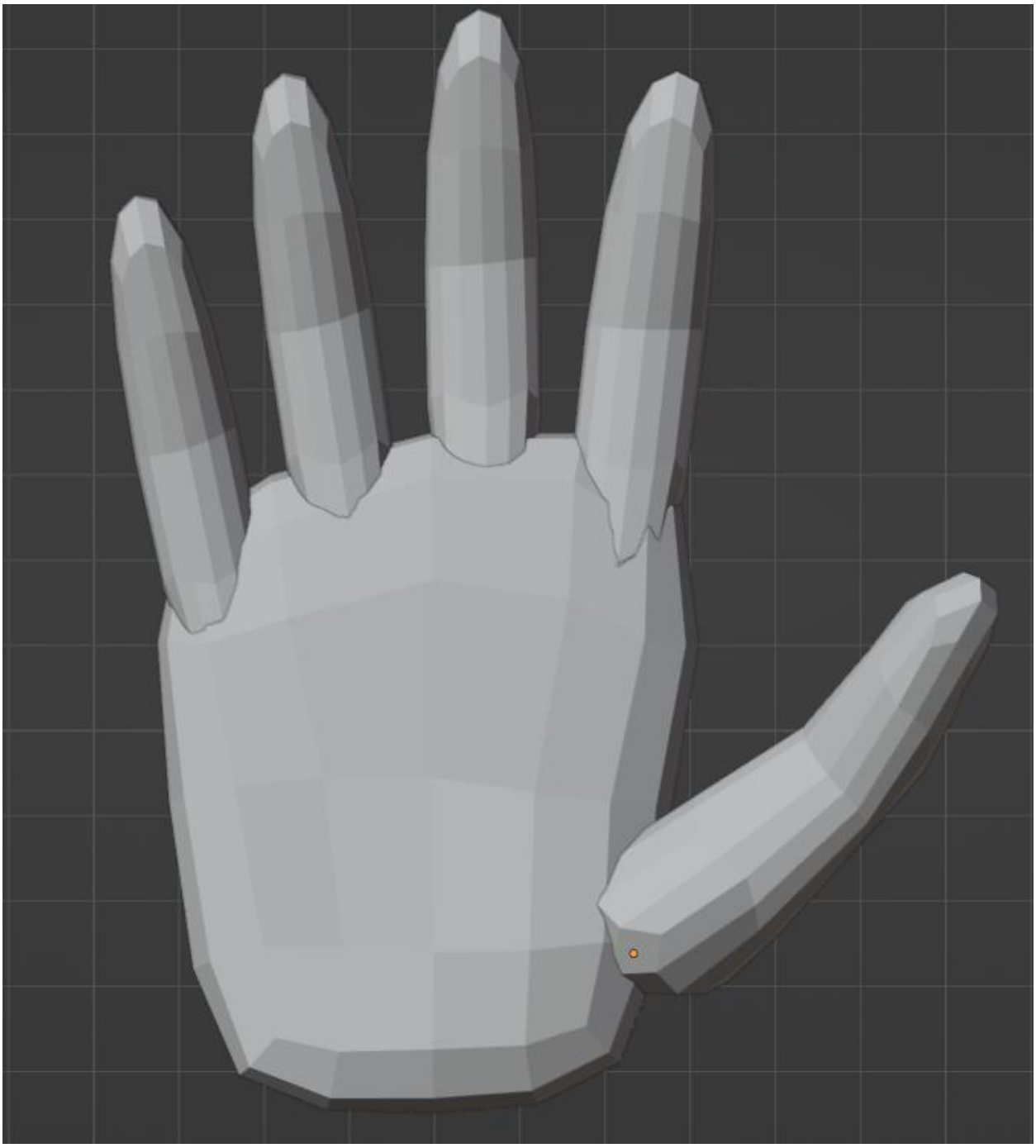


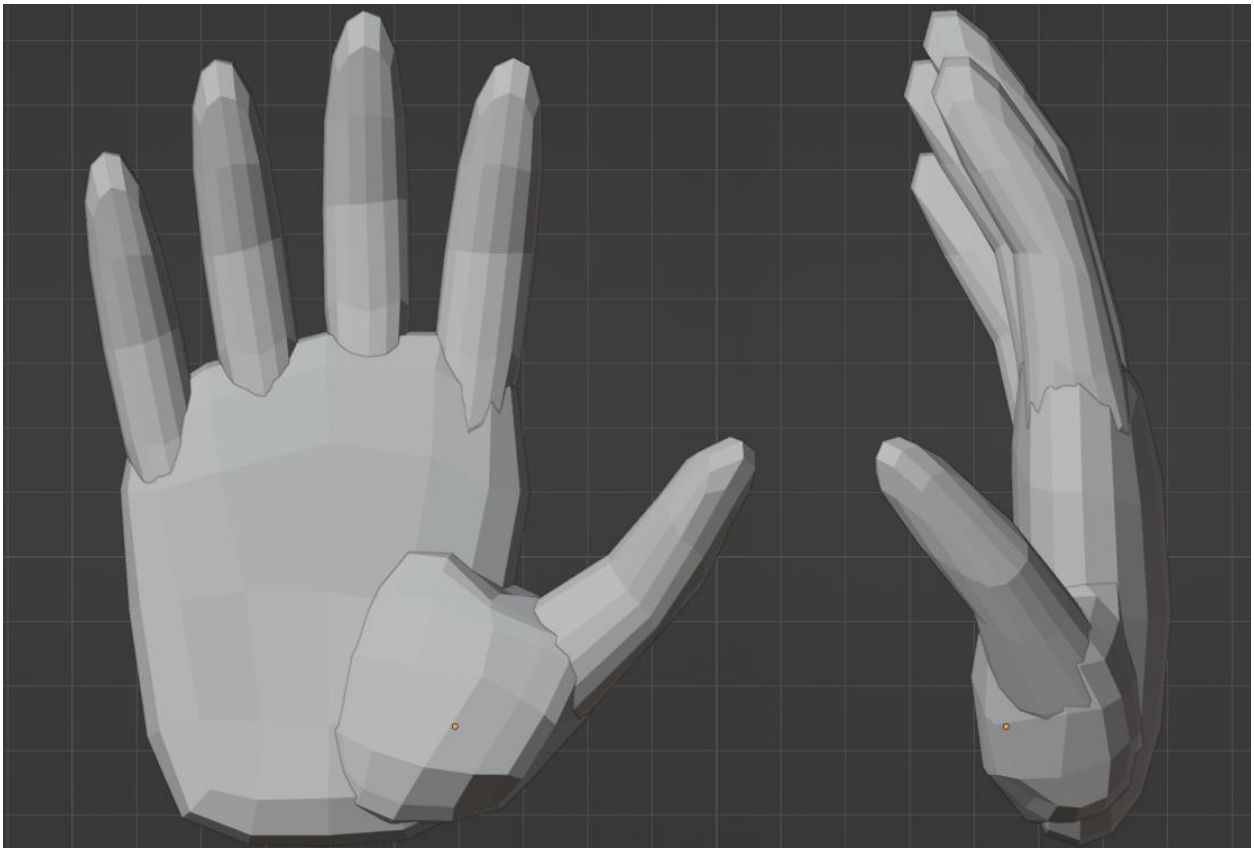


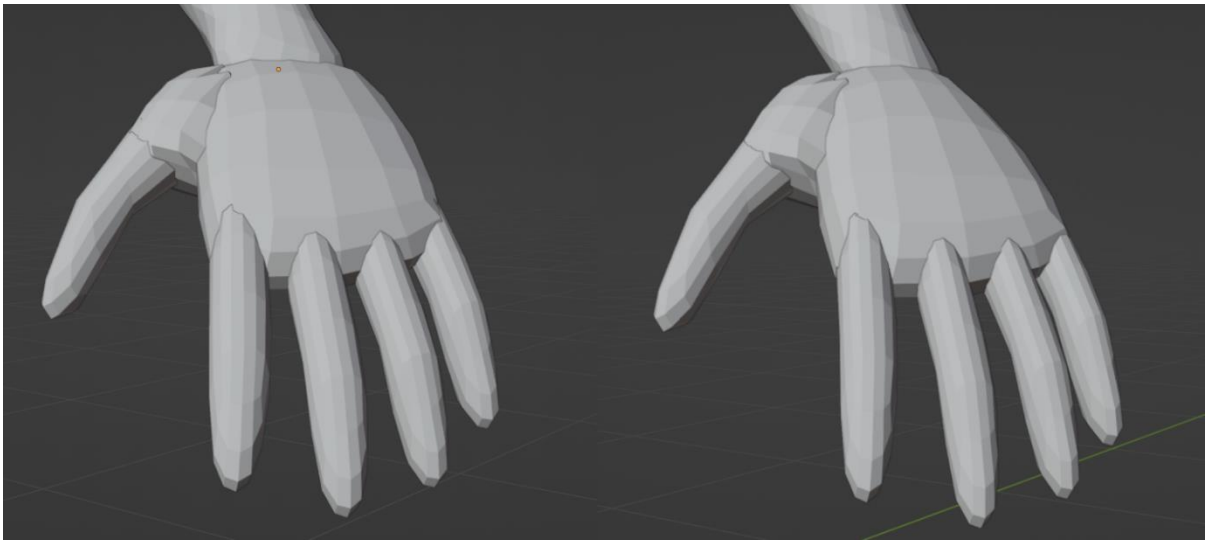


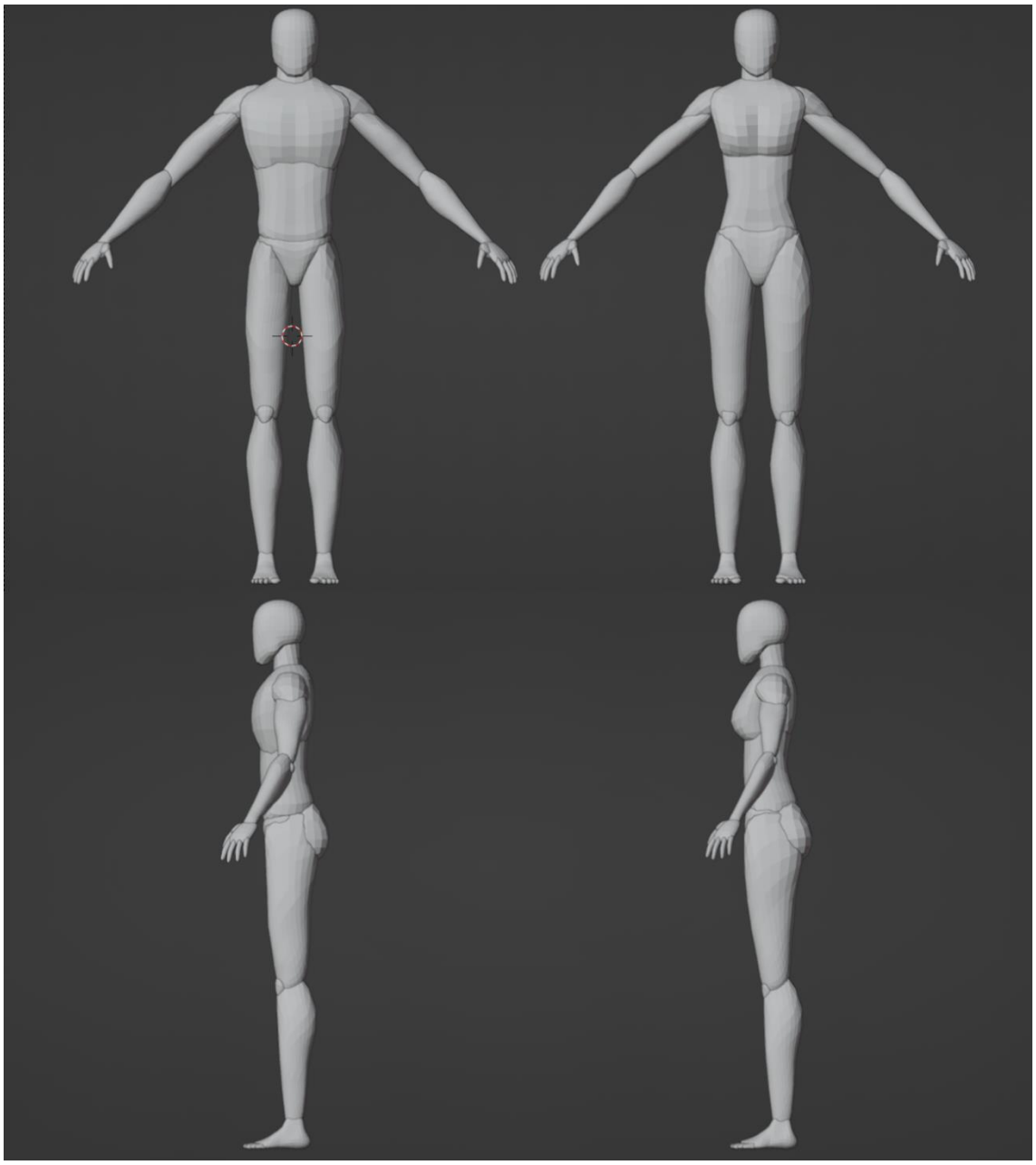




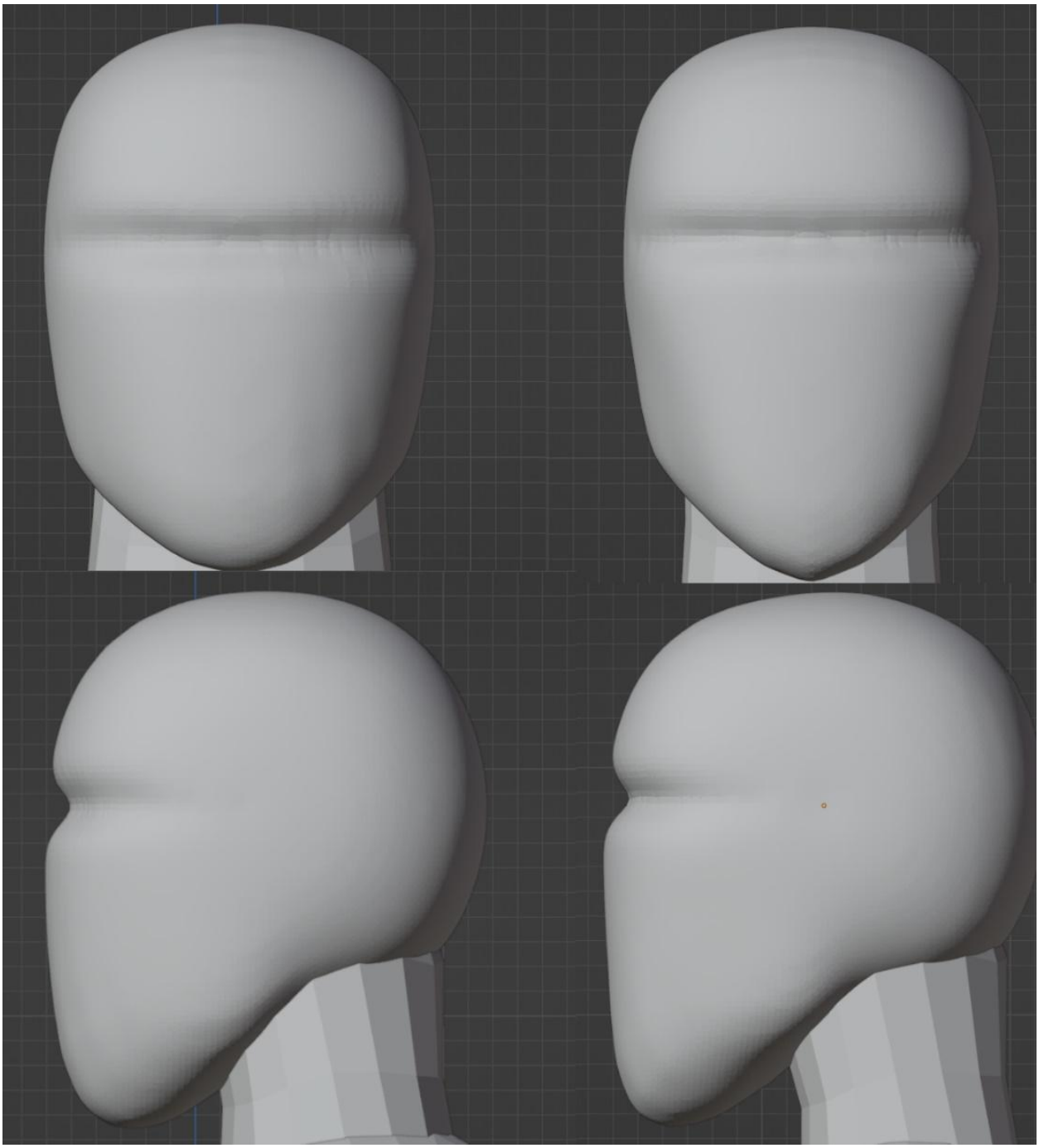


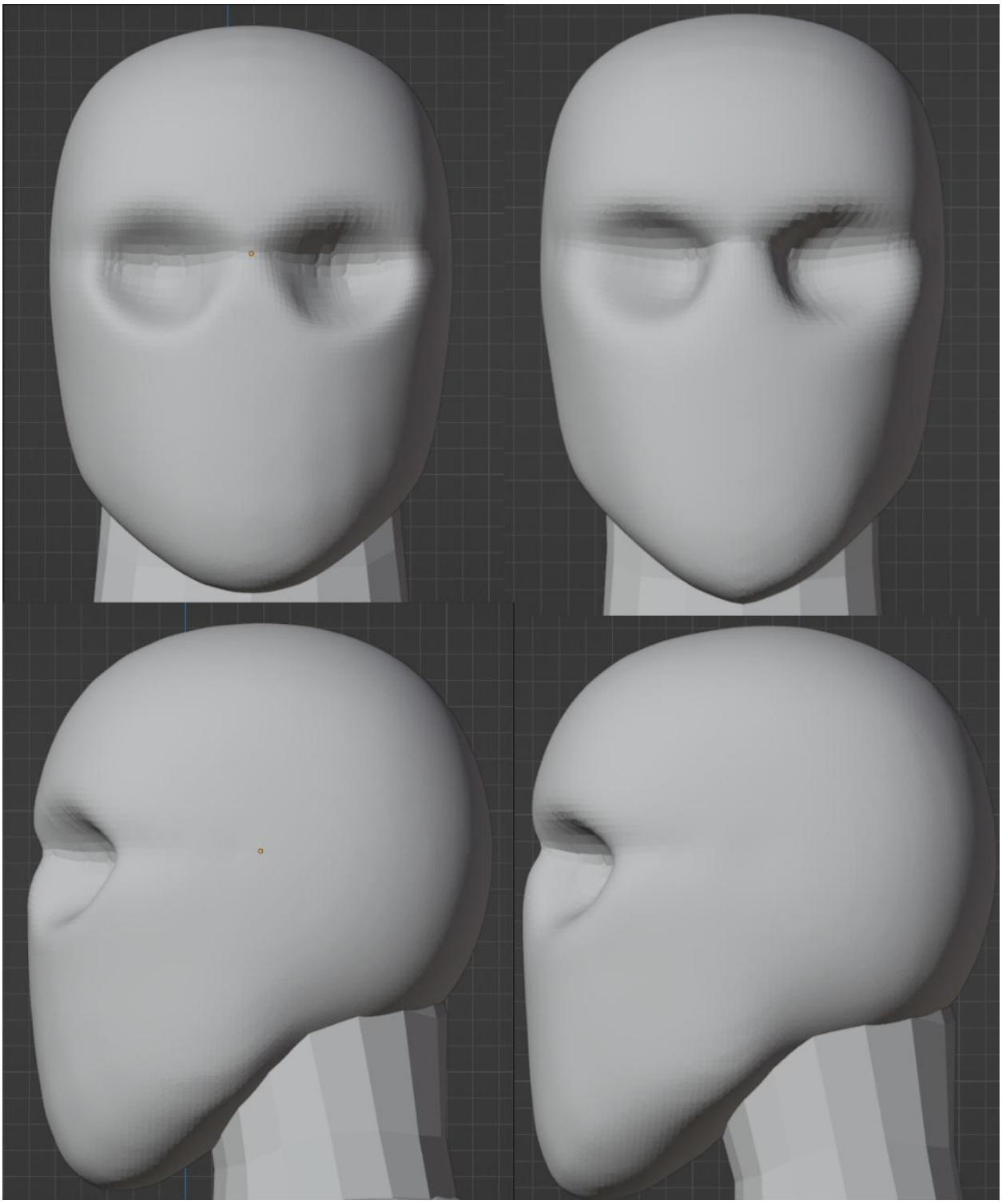


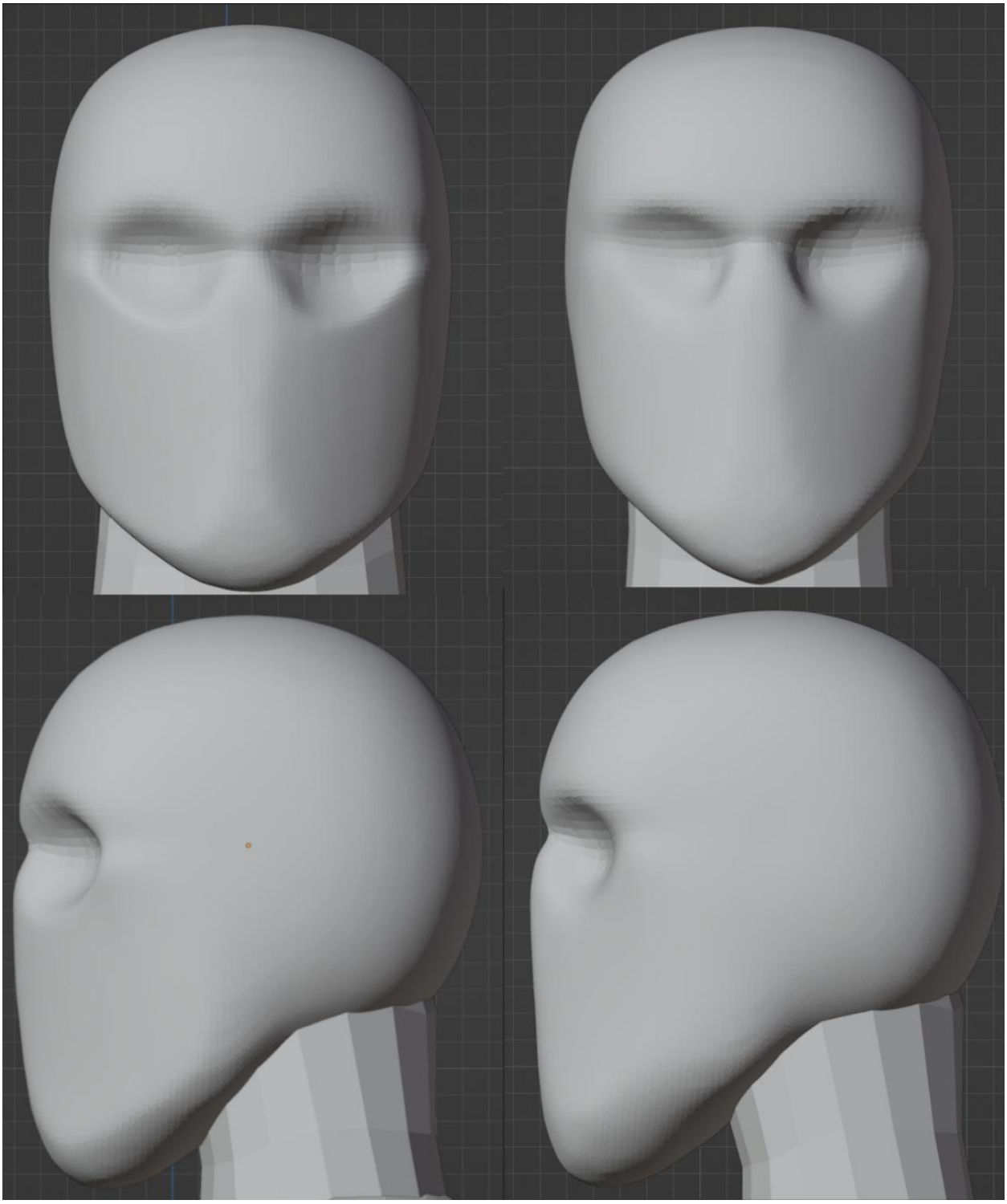


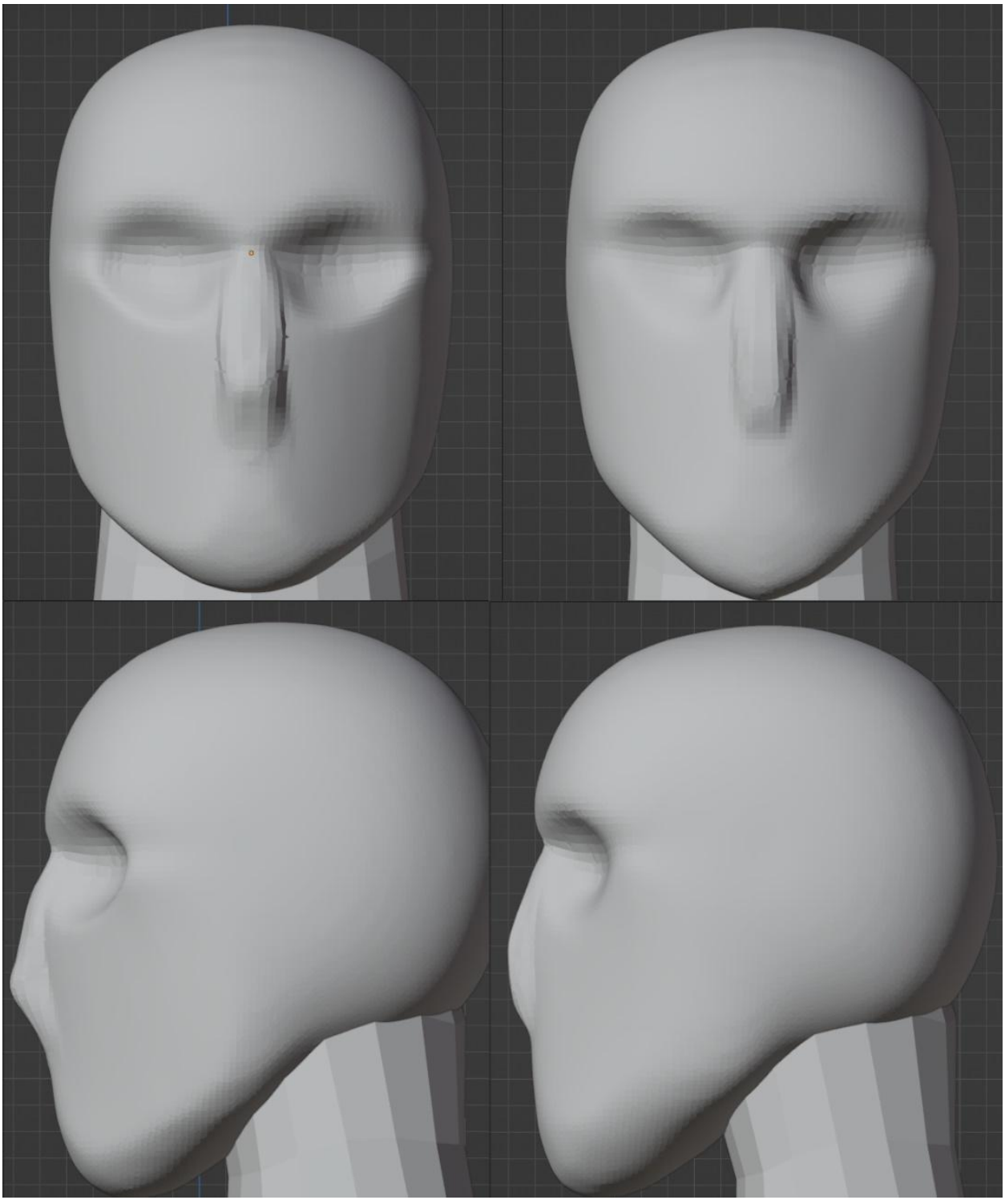


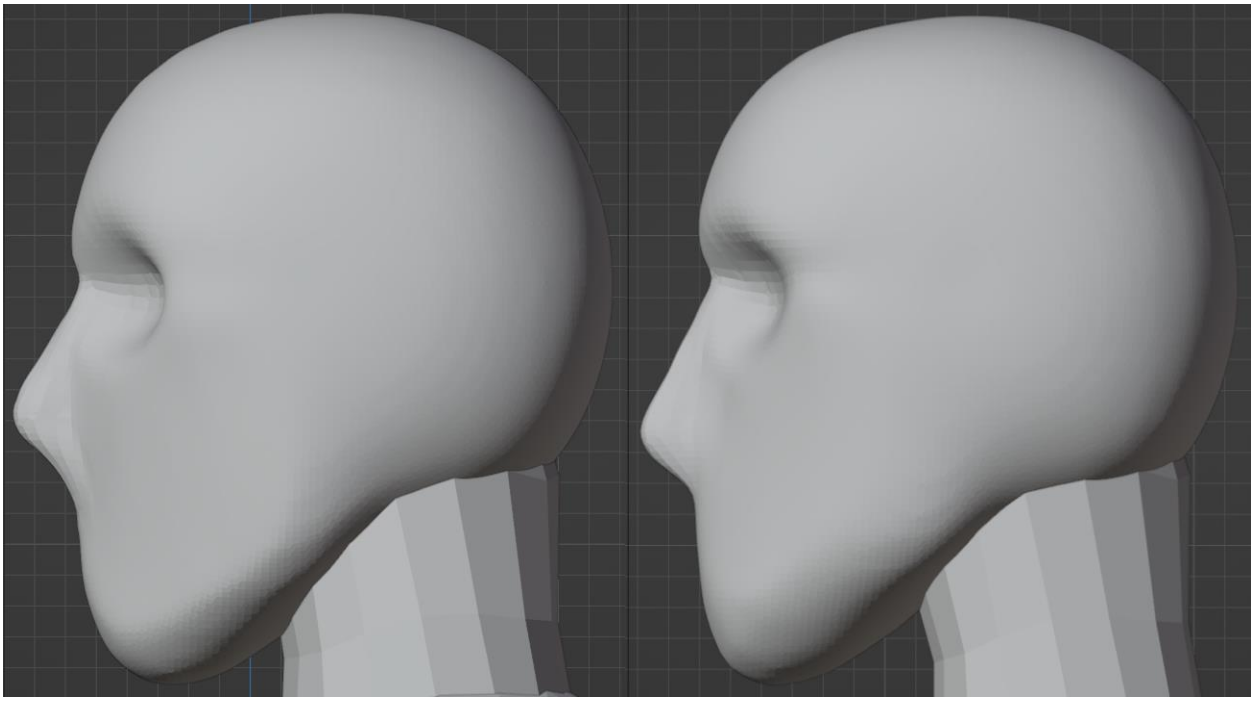
Chapter 8: Refining the Base Meshes

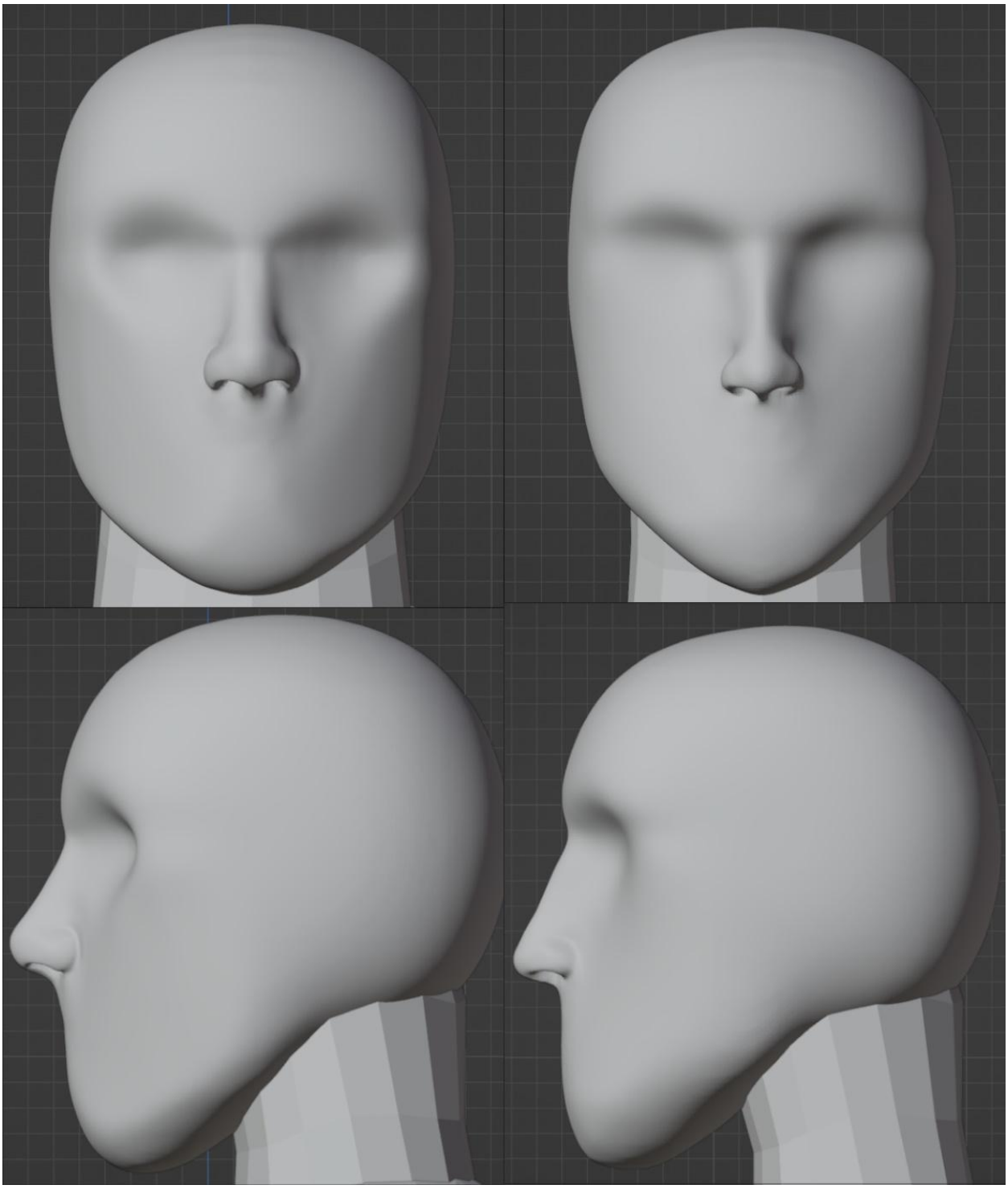


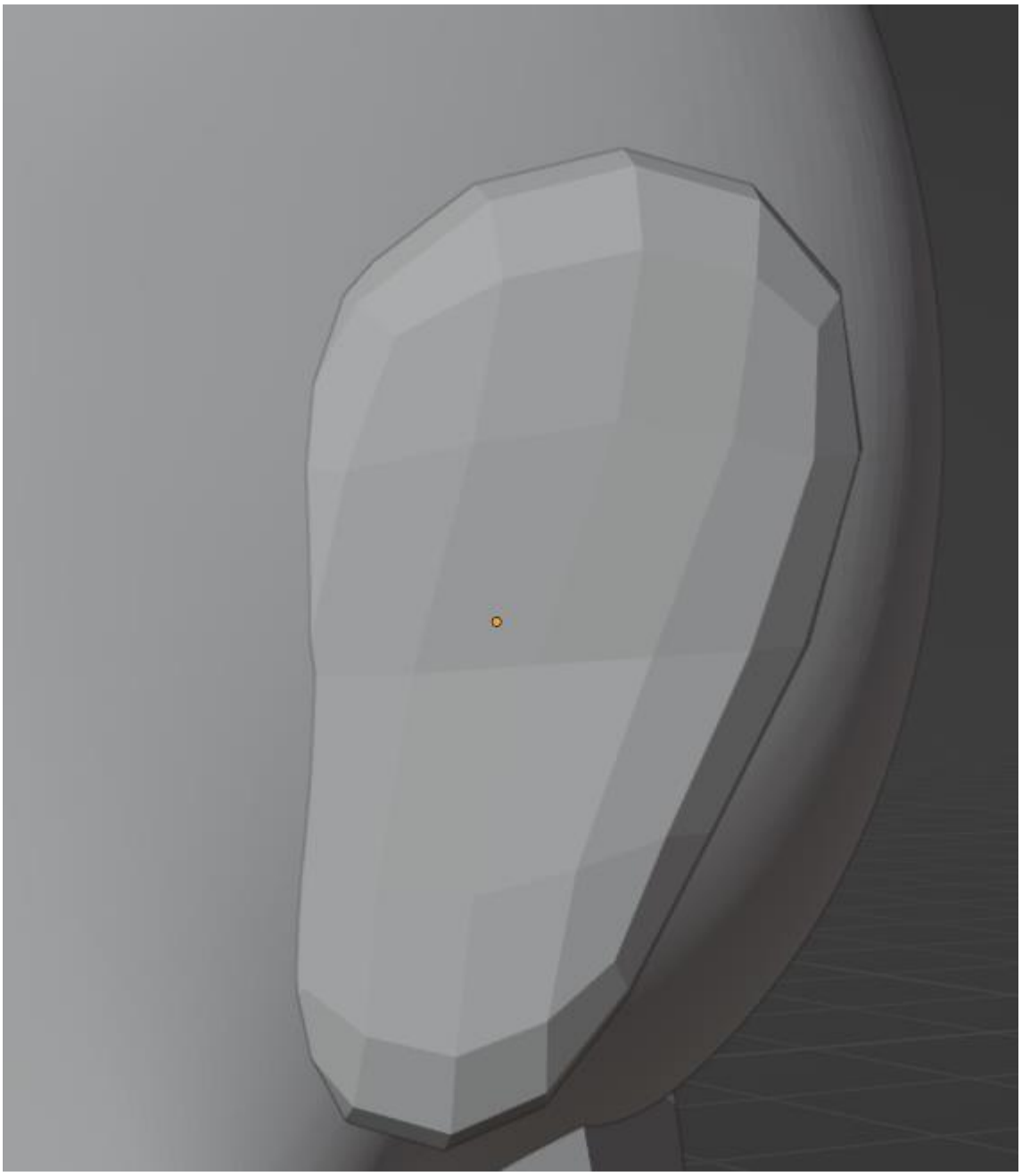


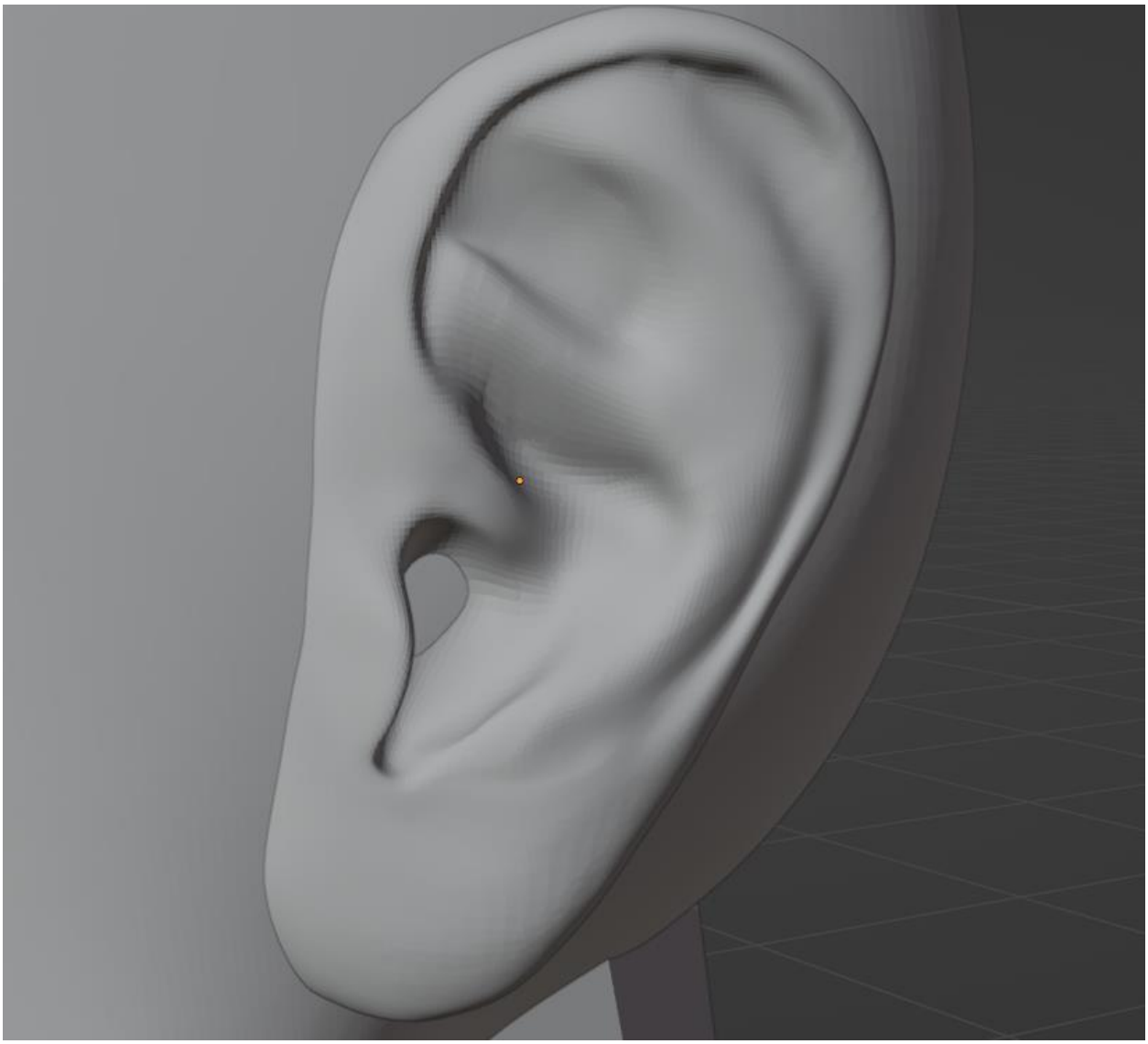


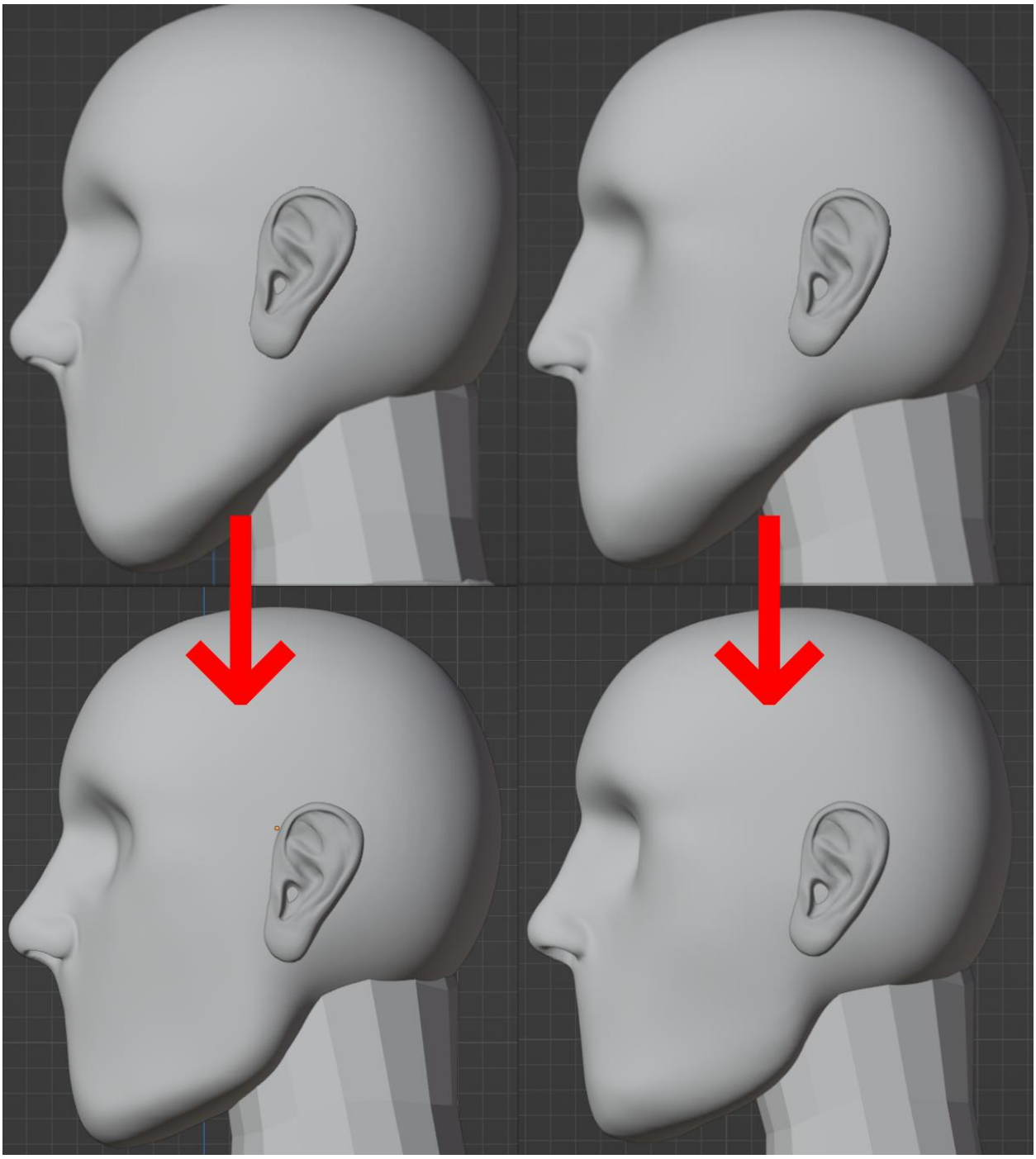


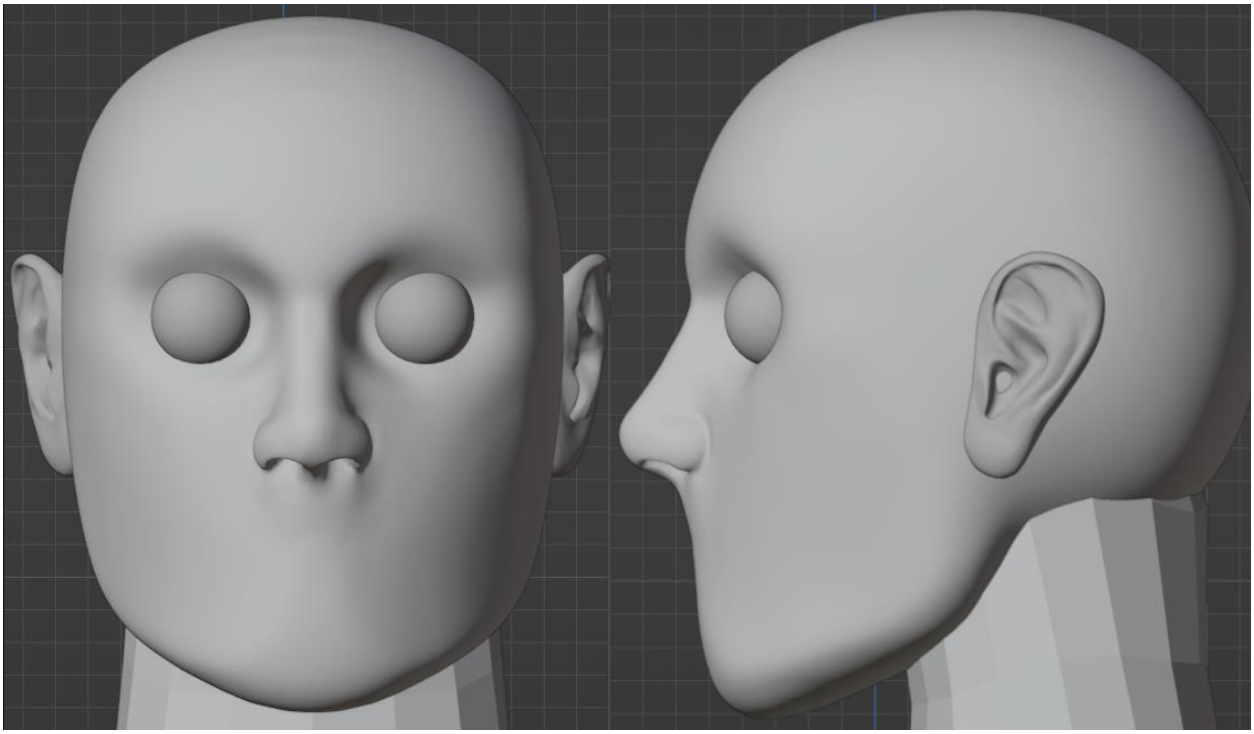


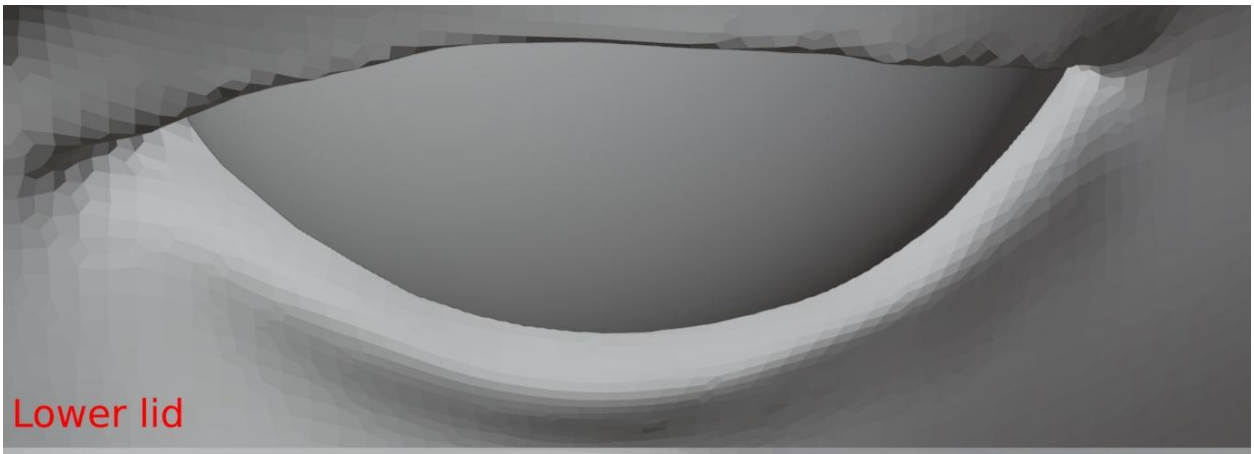








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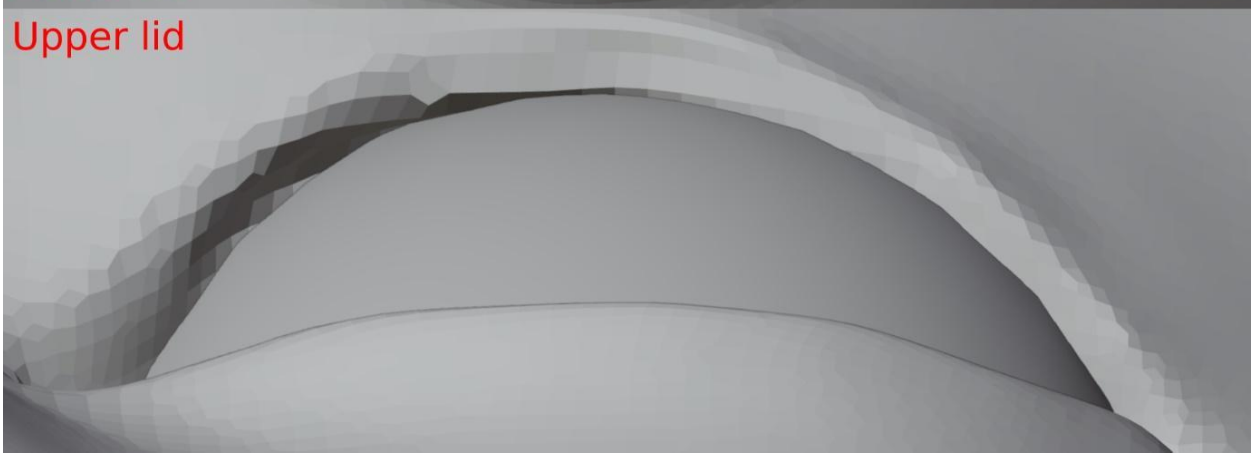
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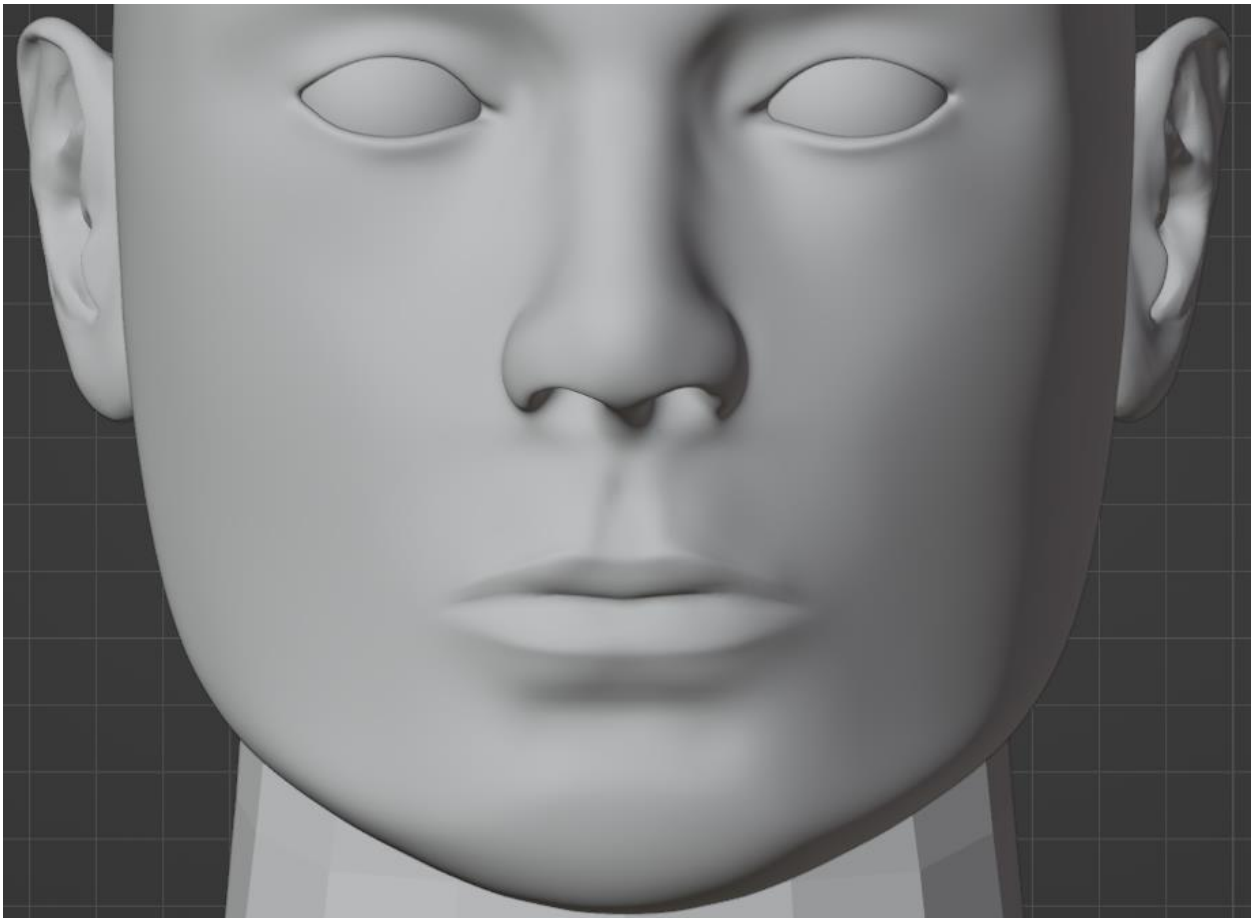
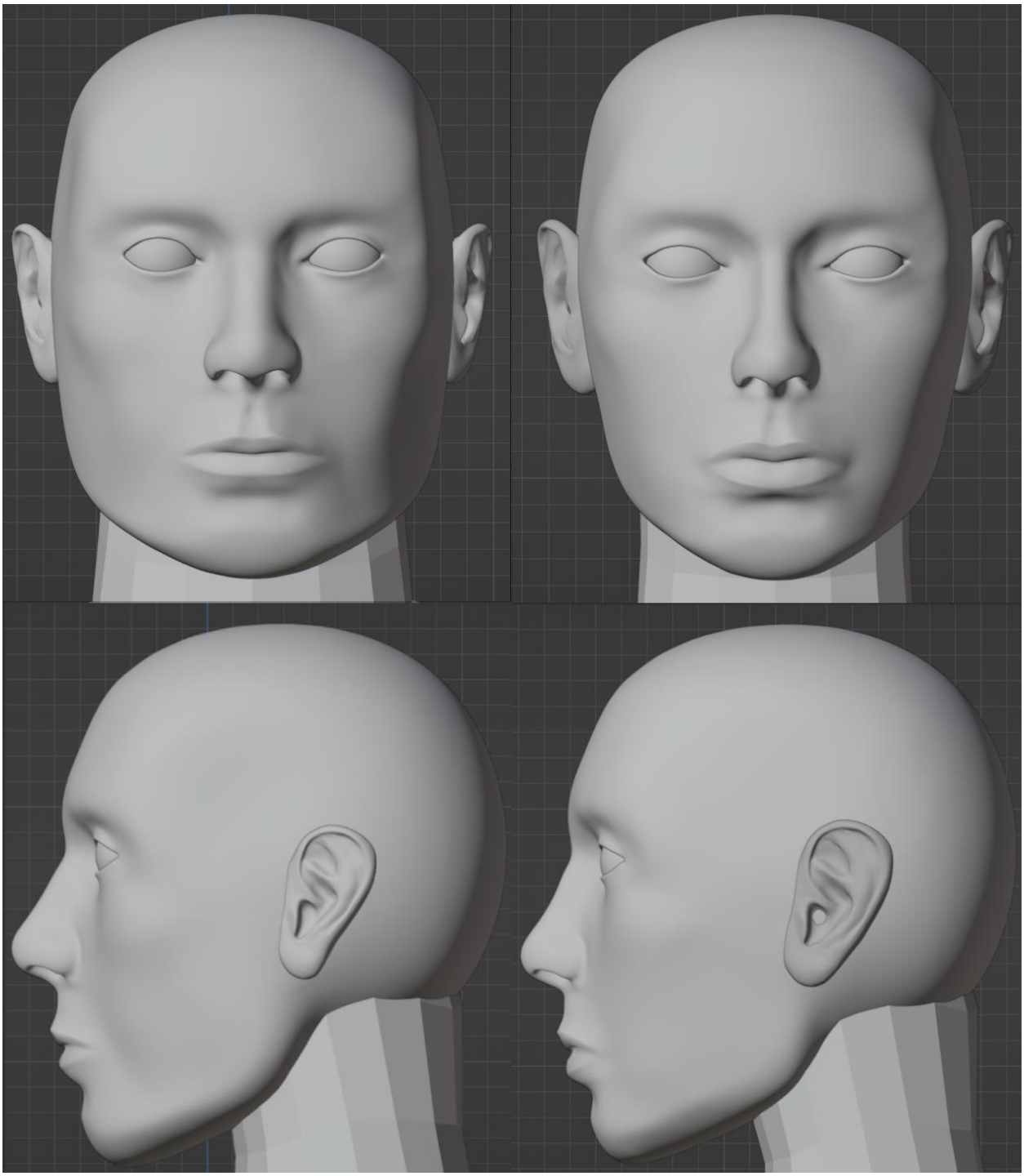
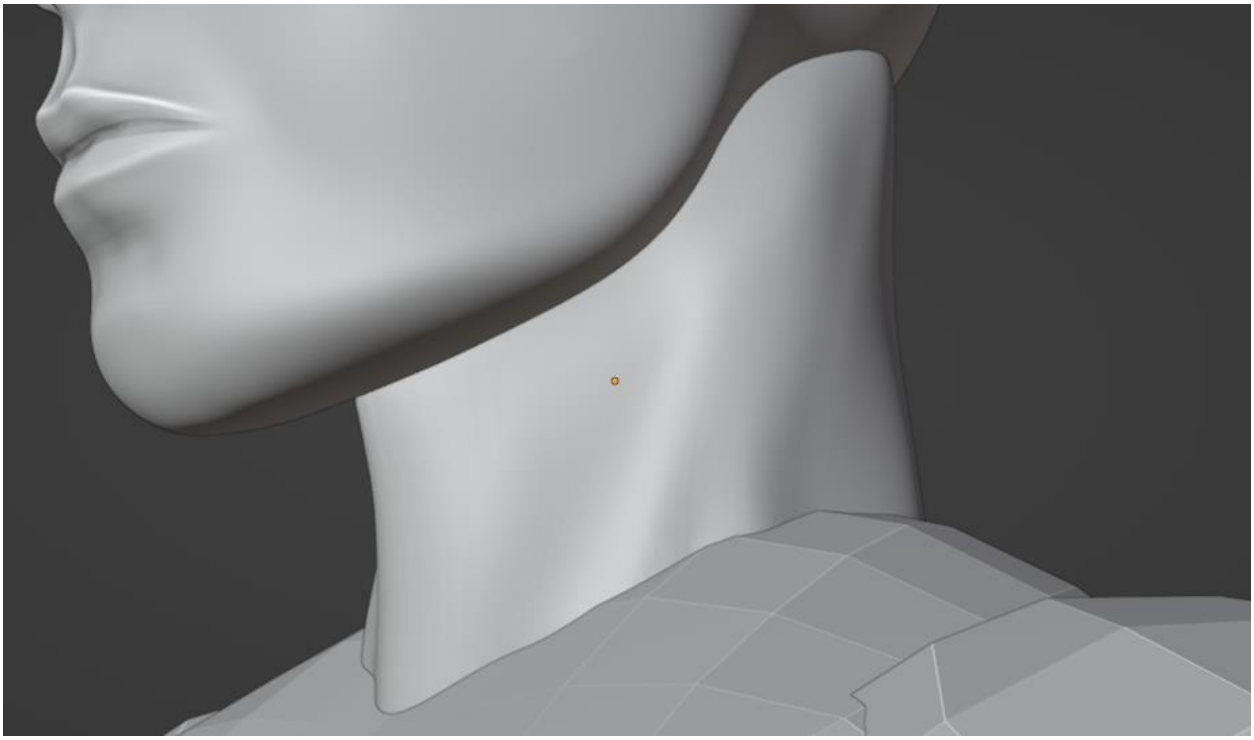
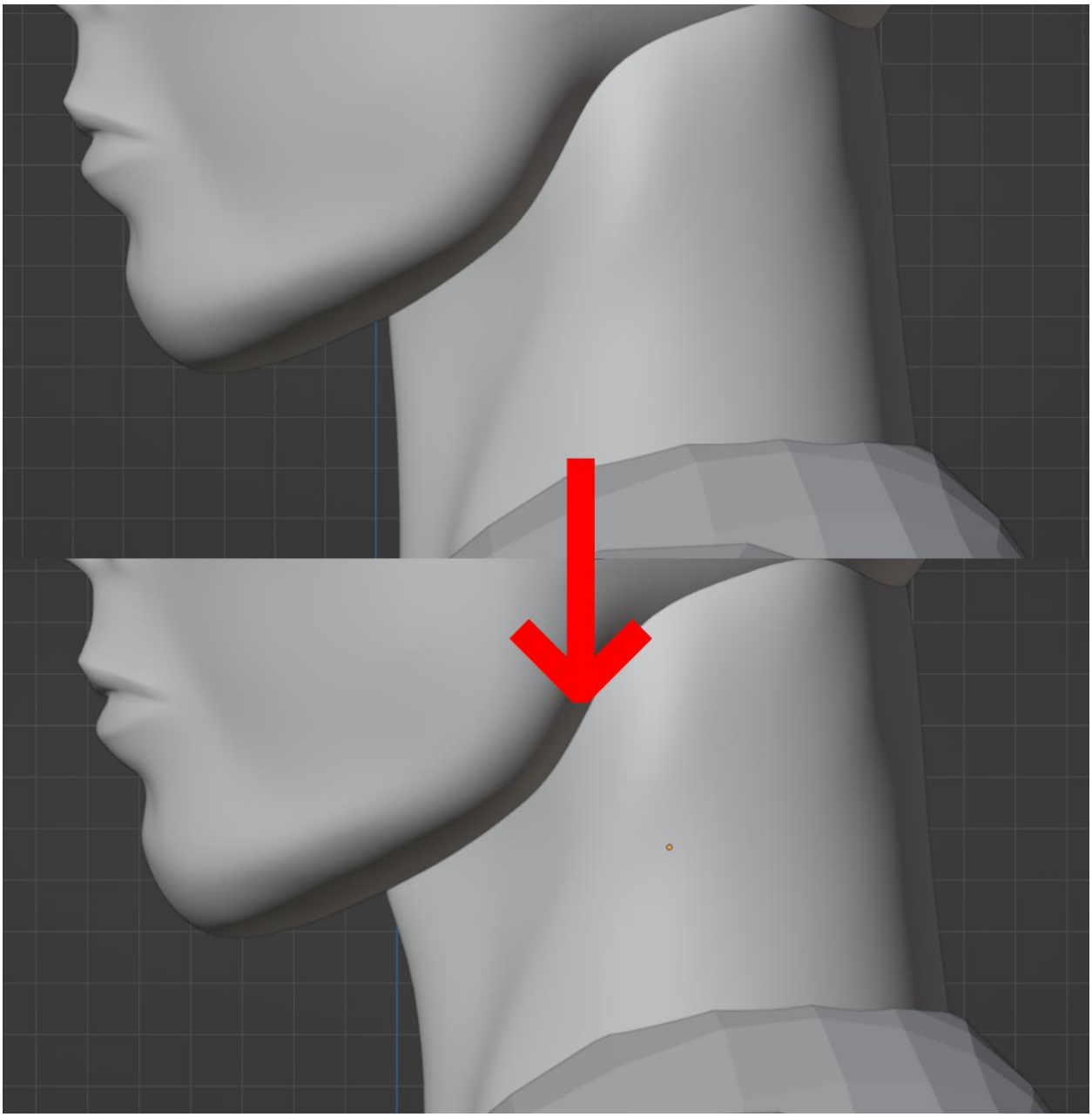
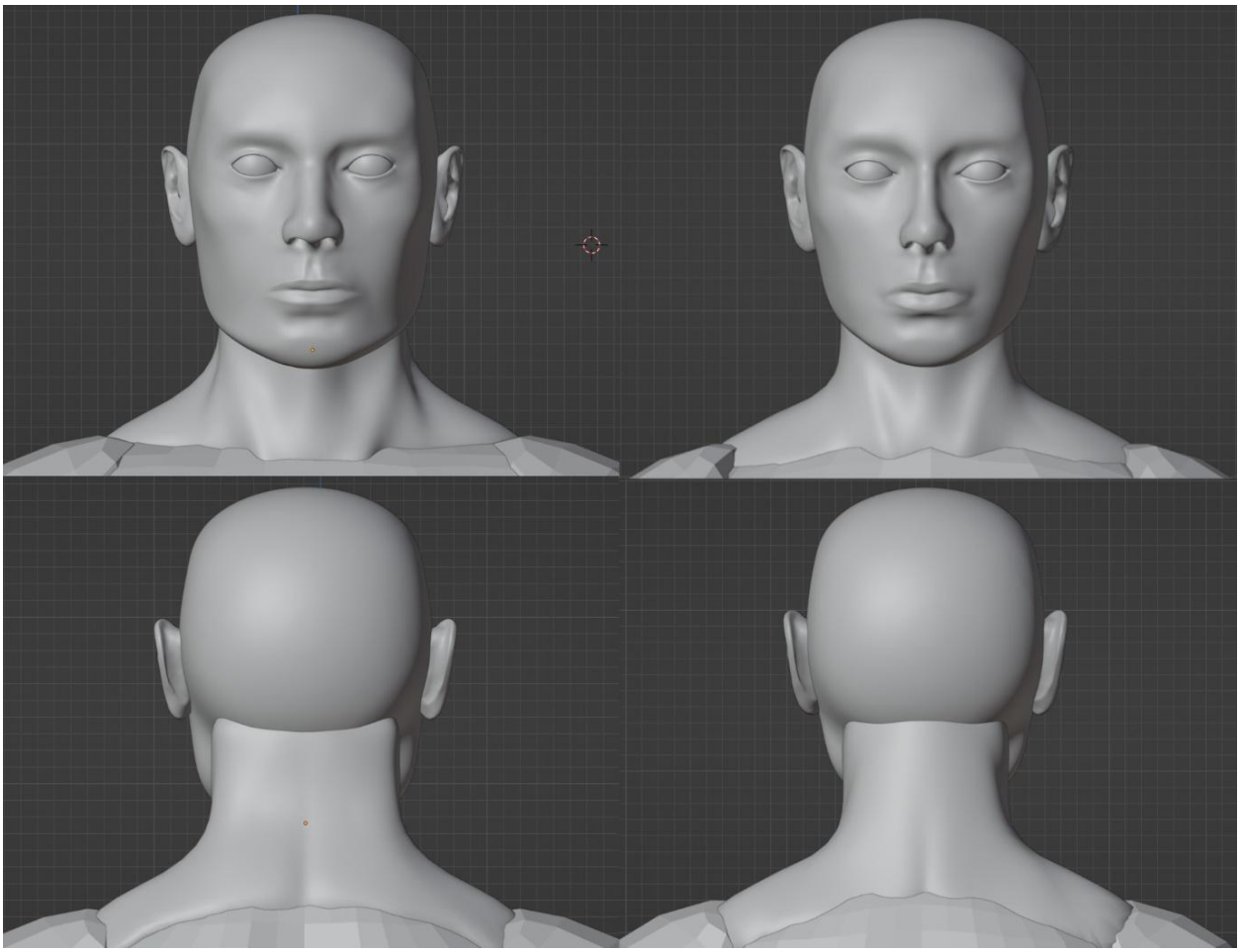
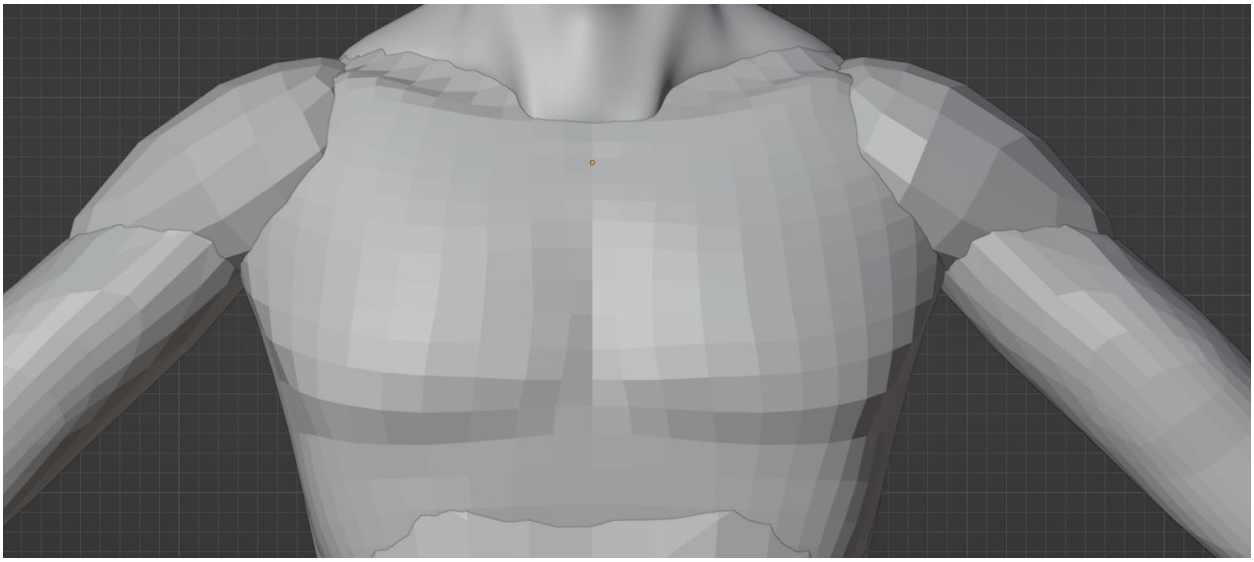


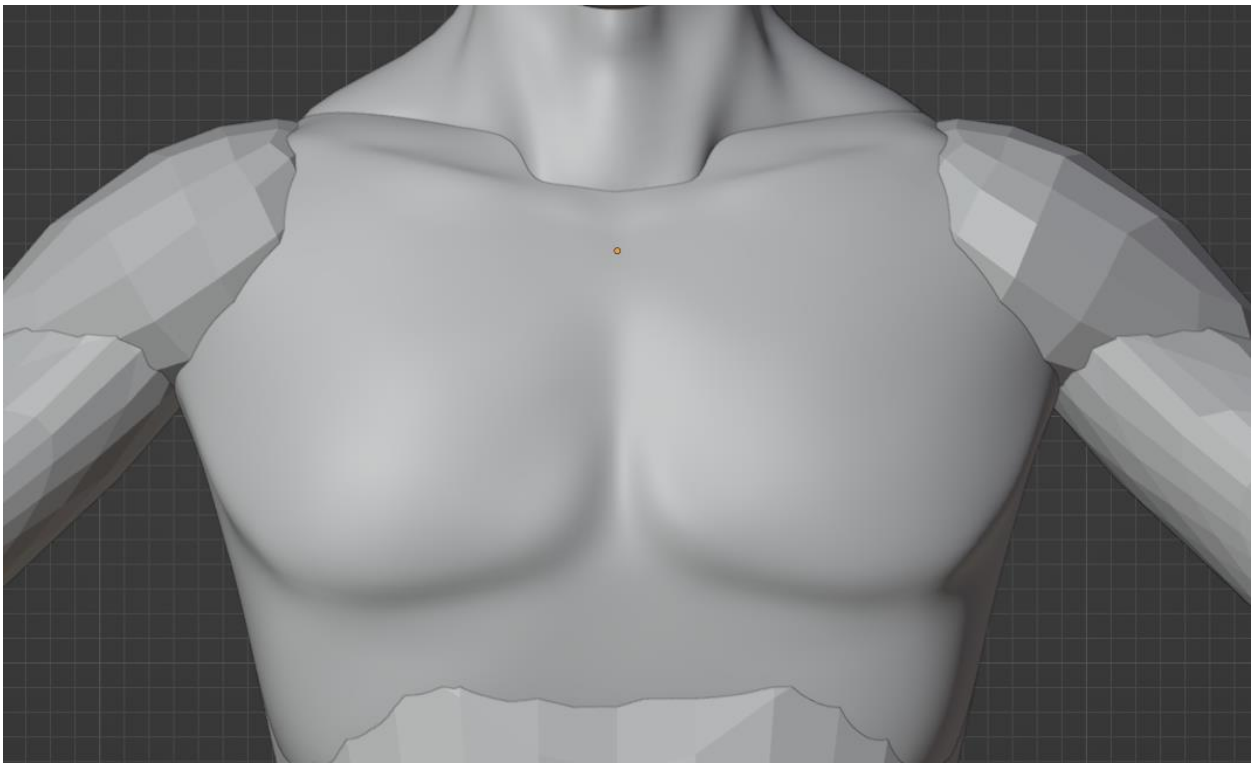


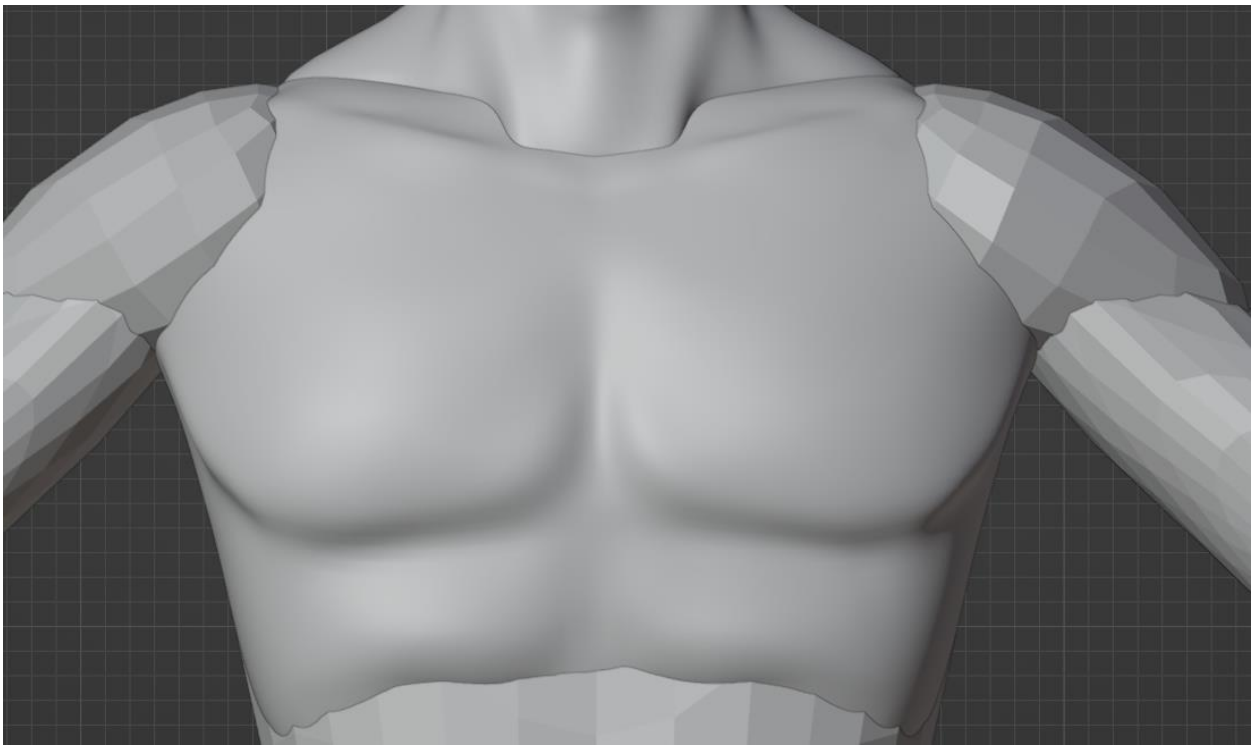


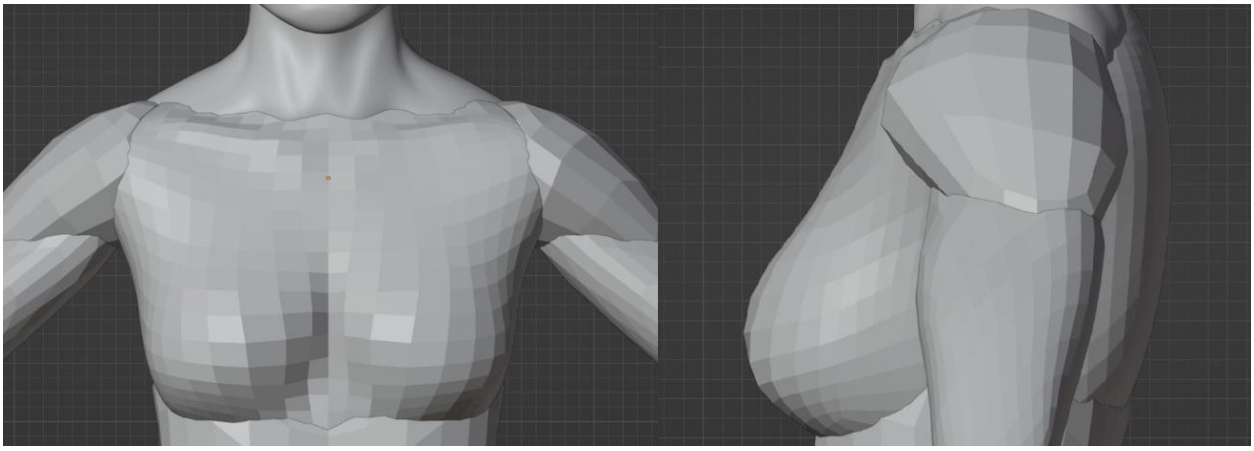


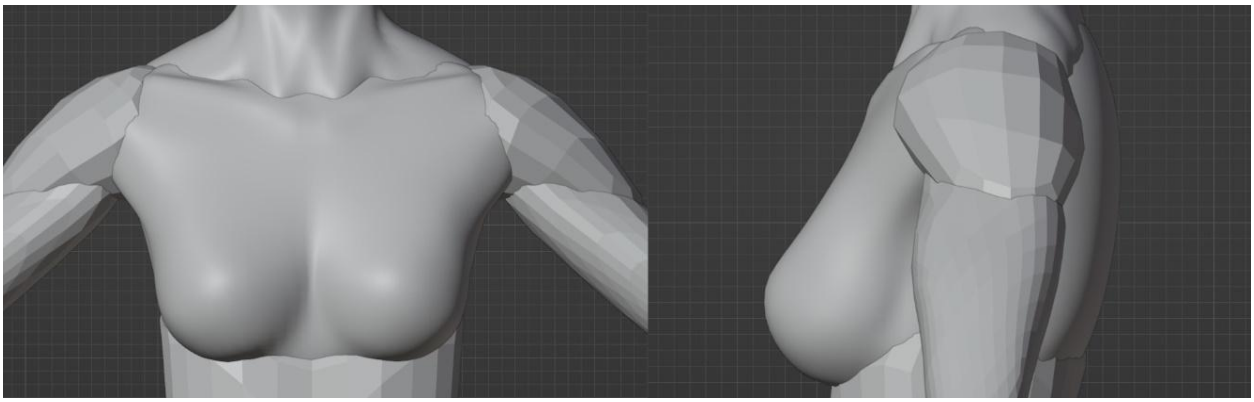


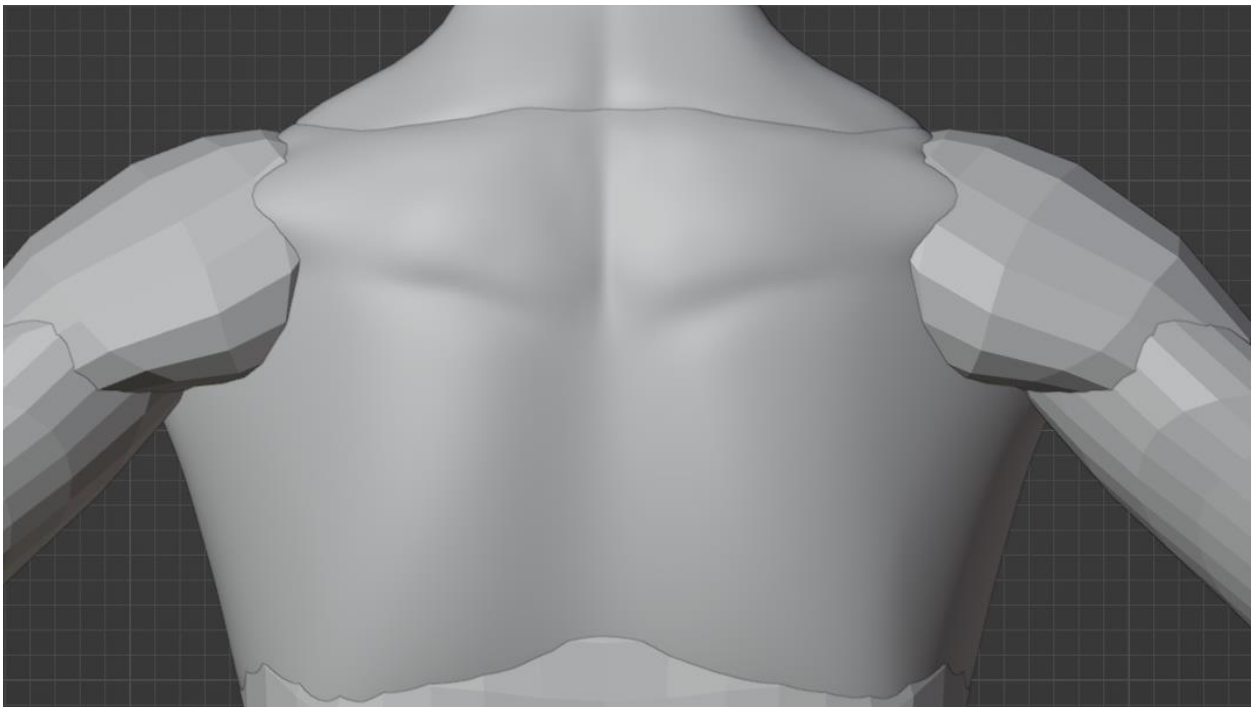


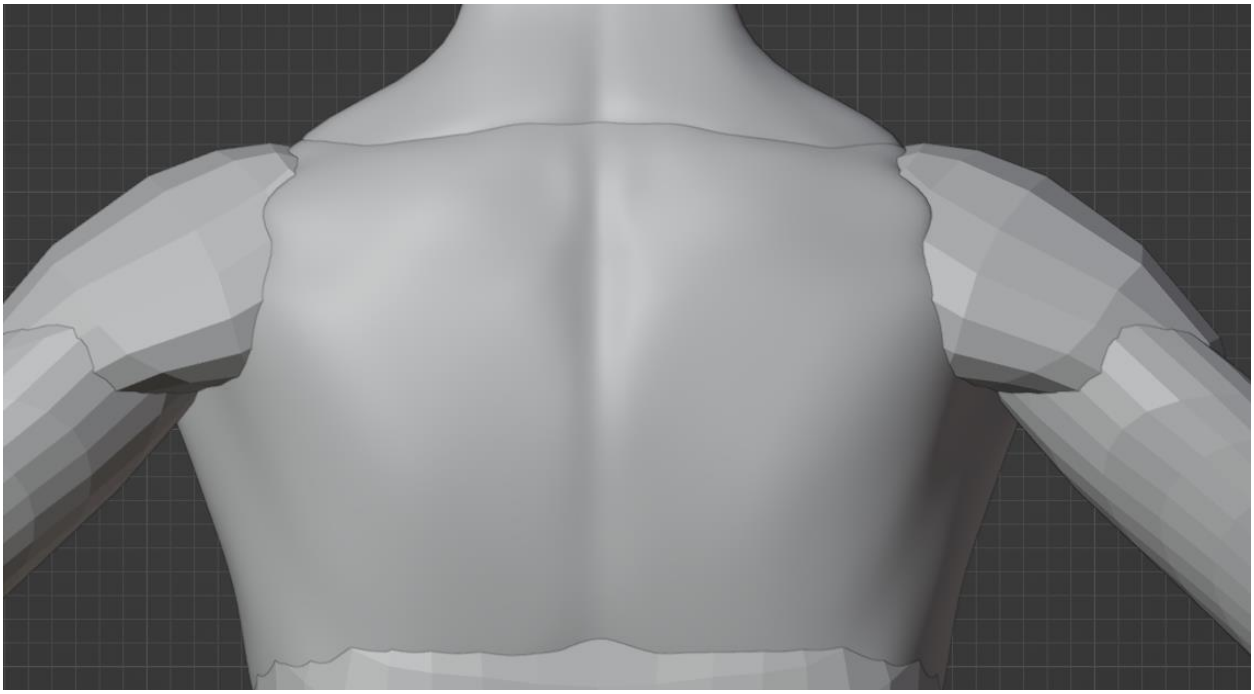


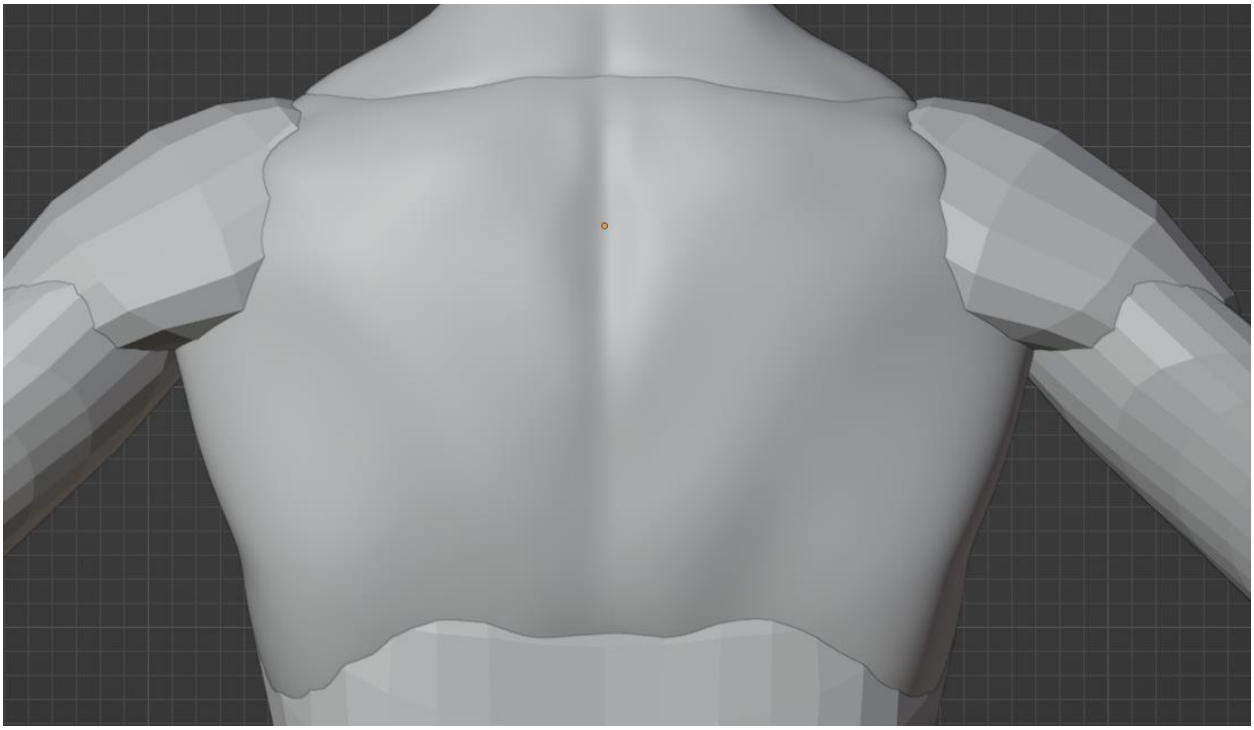


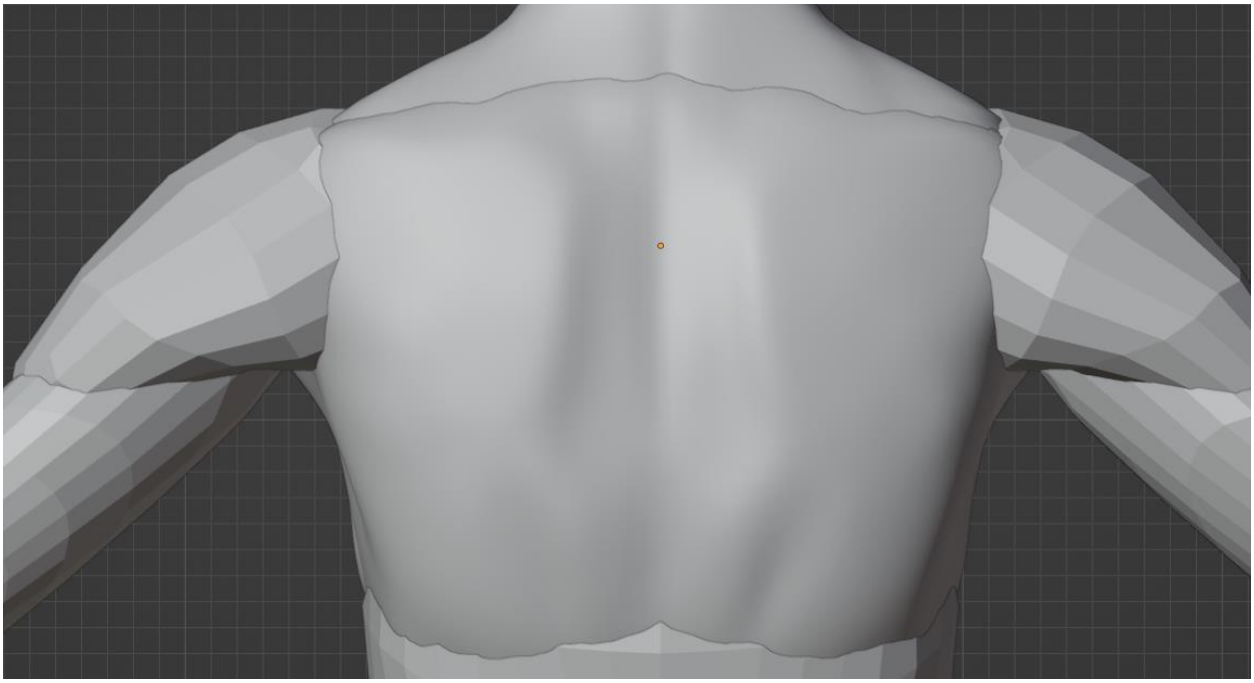


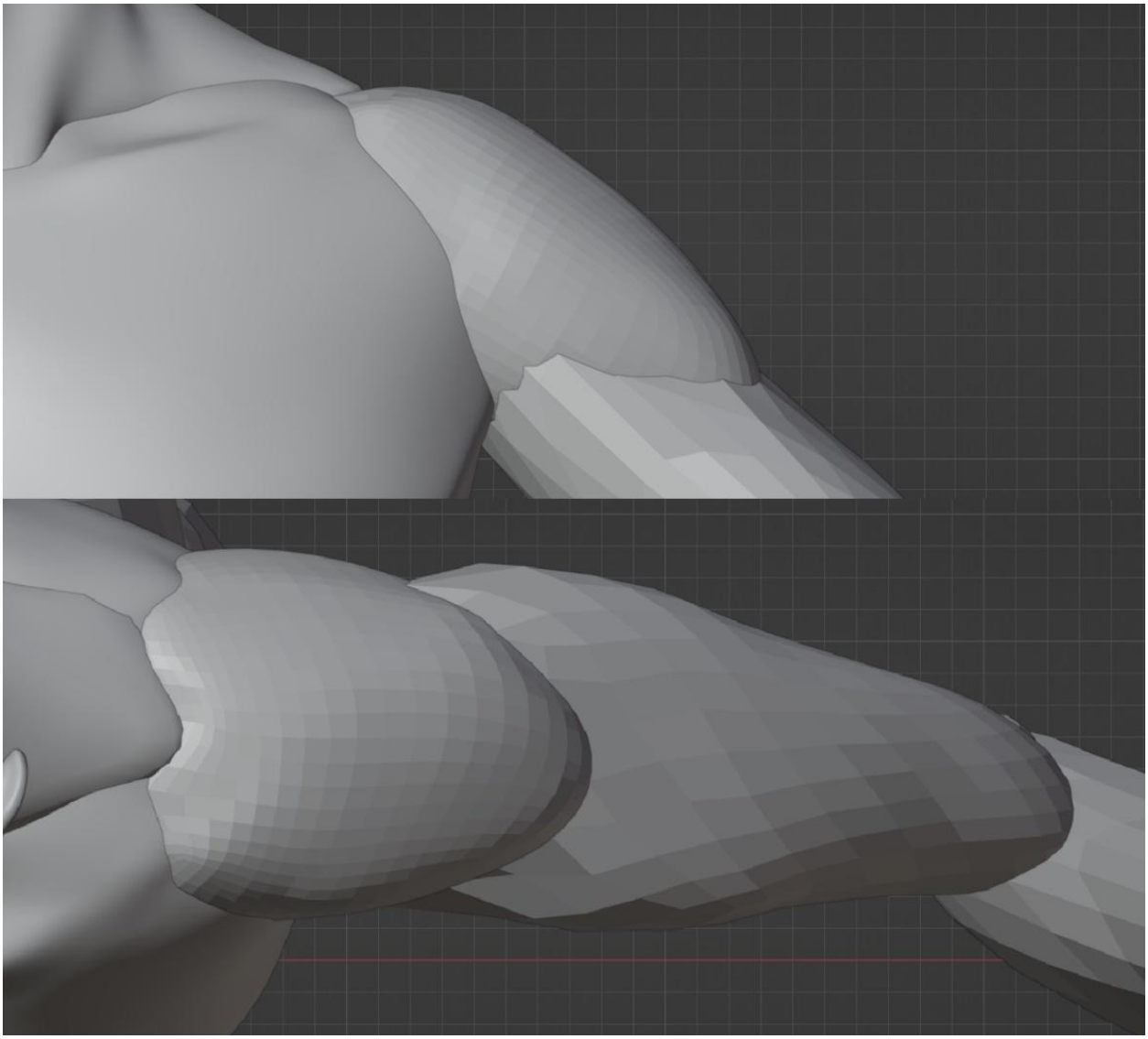


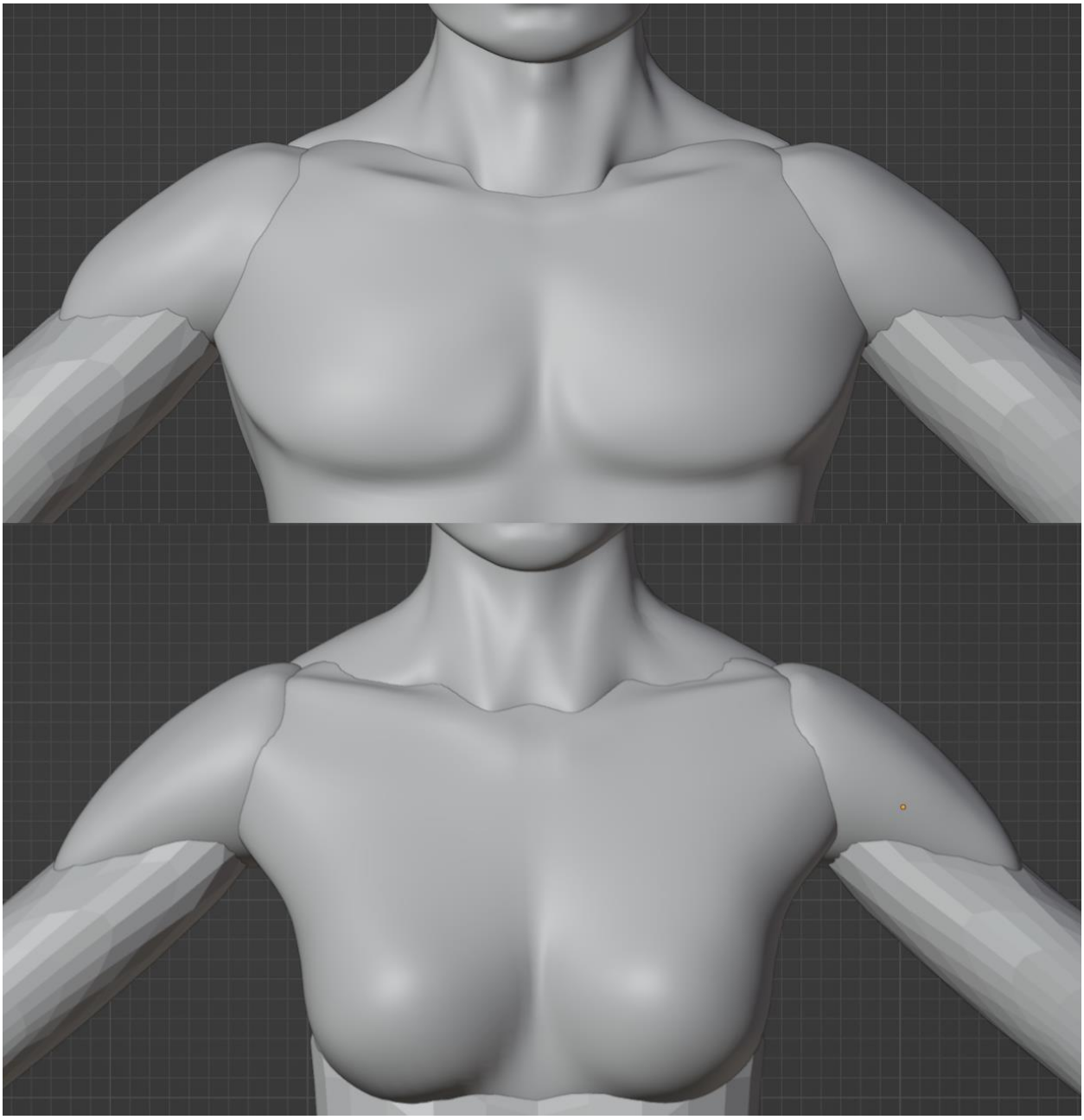


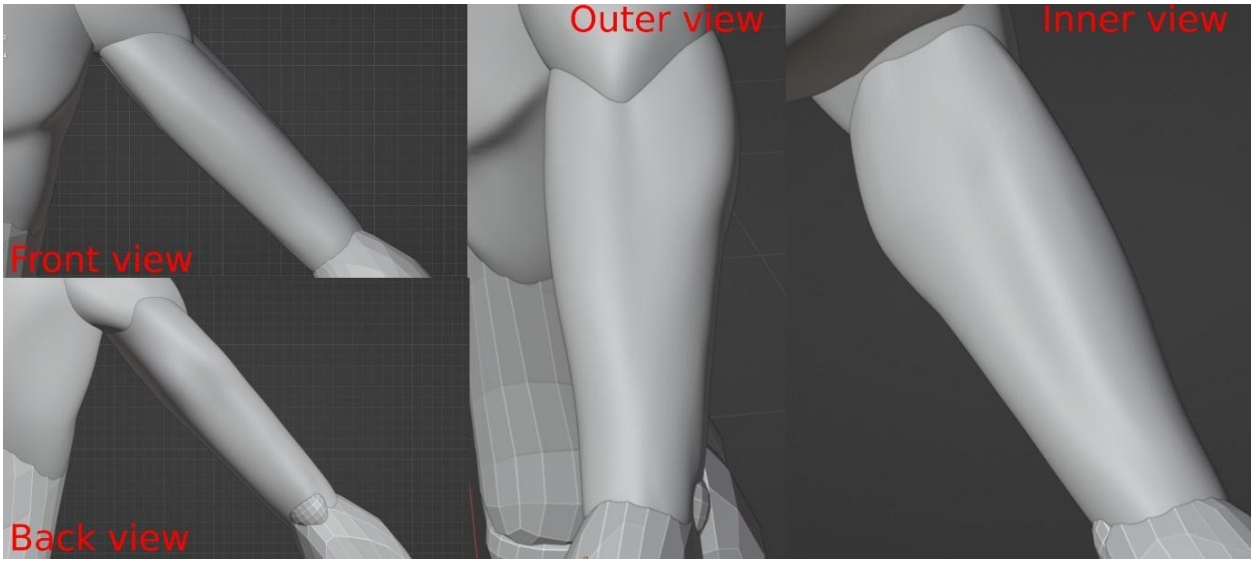


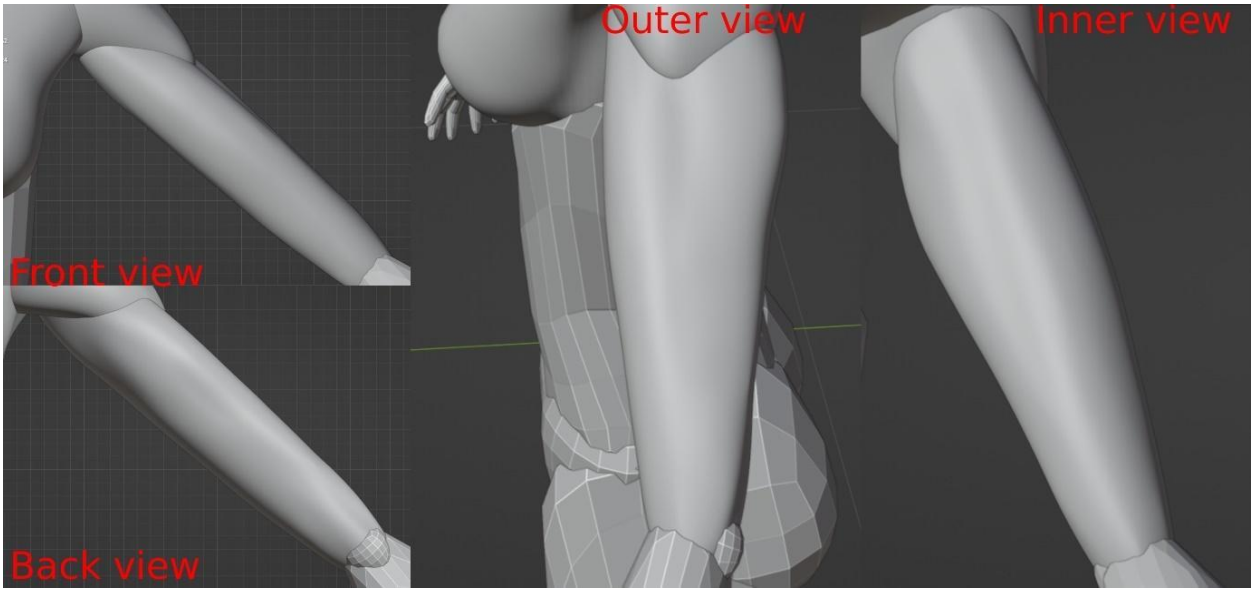









Outer view
Inner view
Front view
Back view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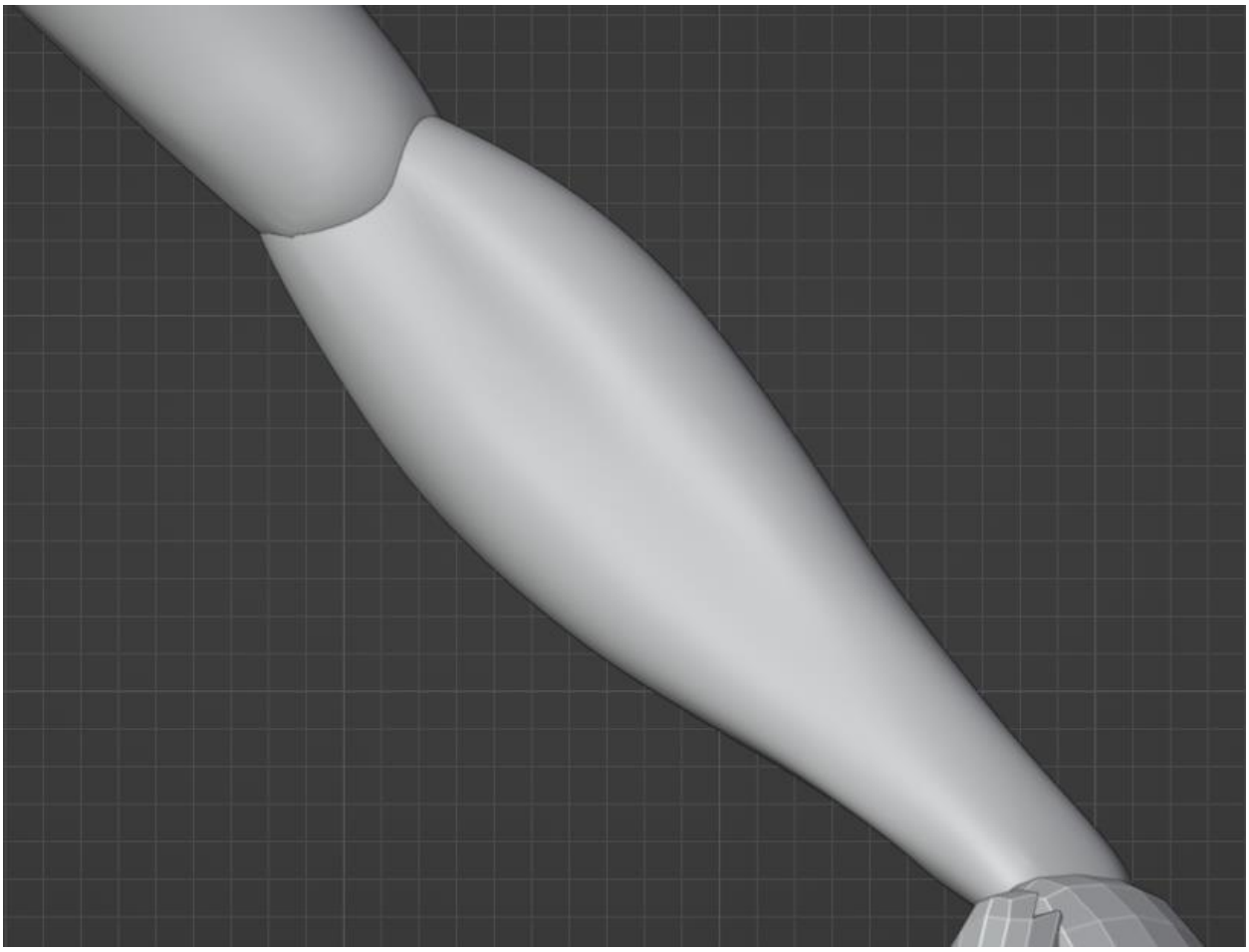

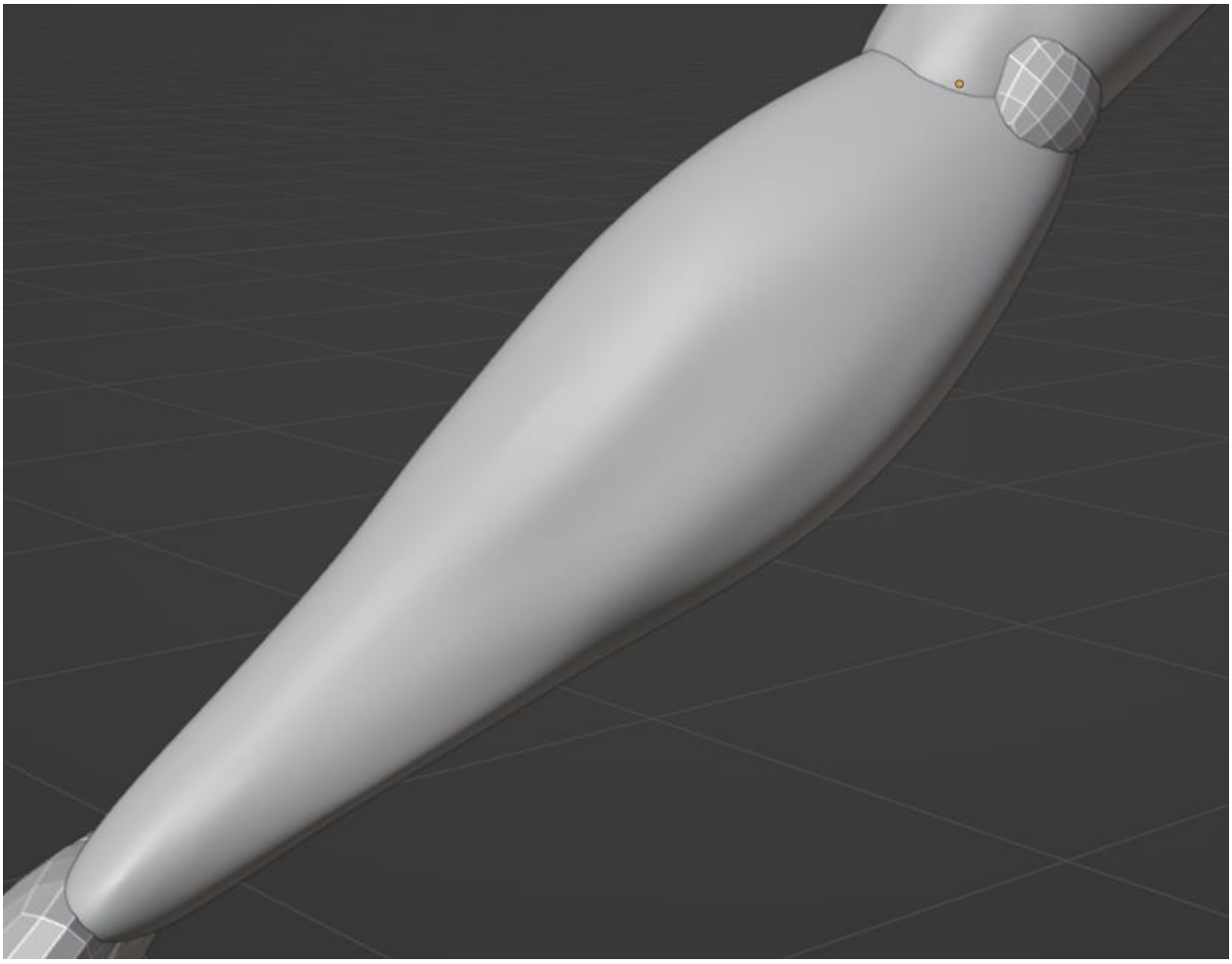

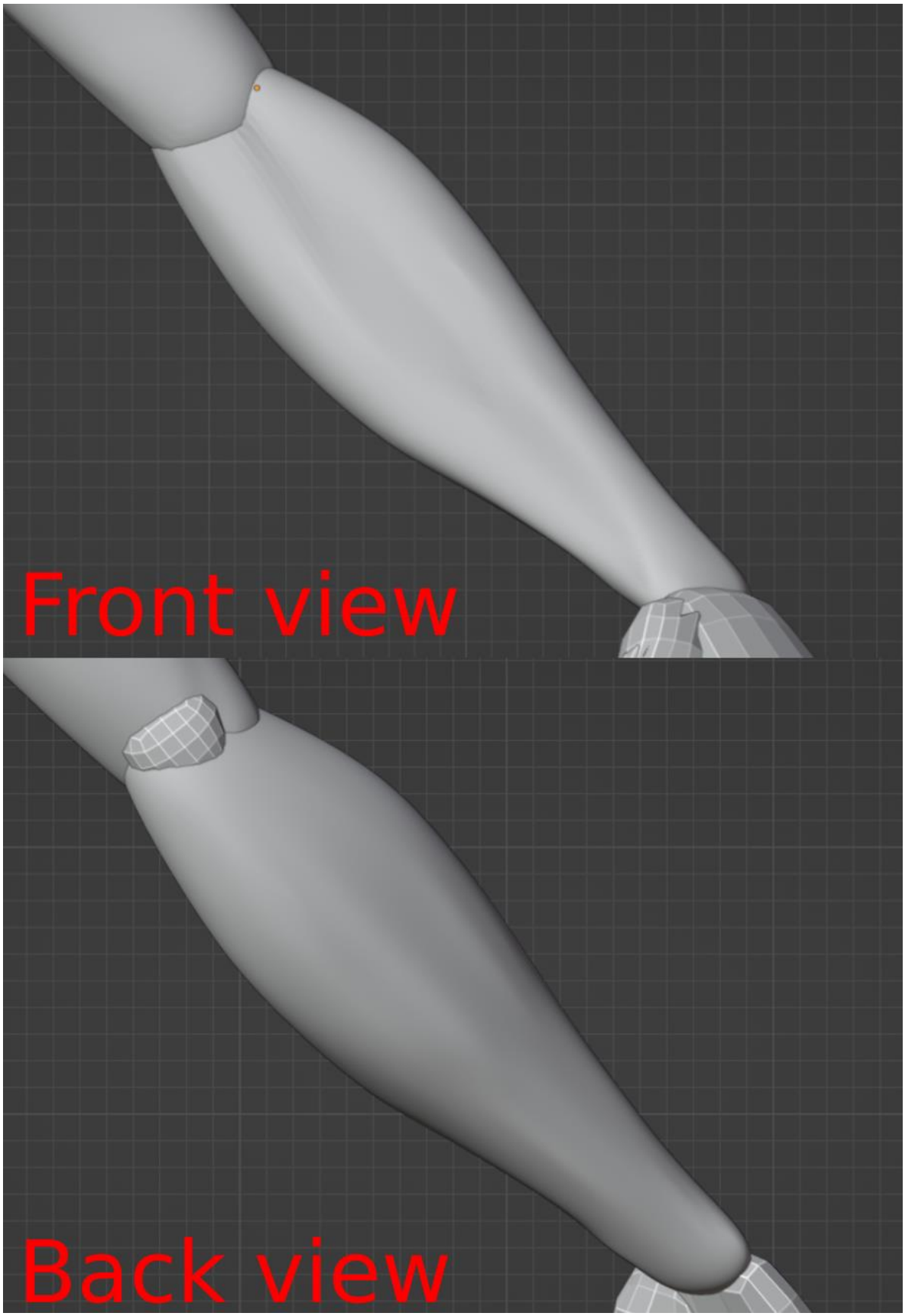
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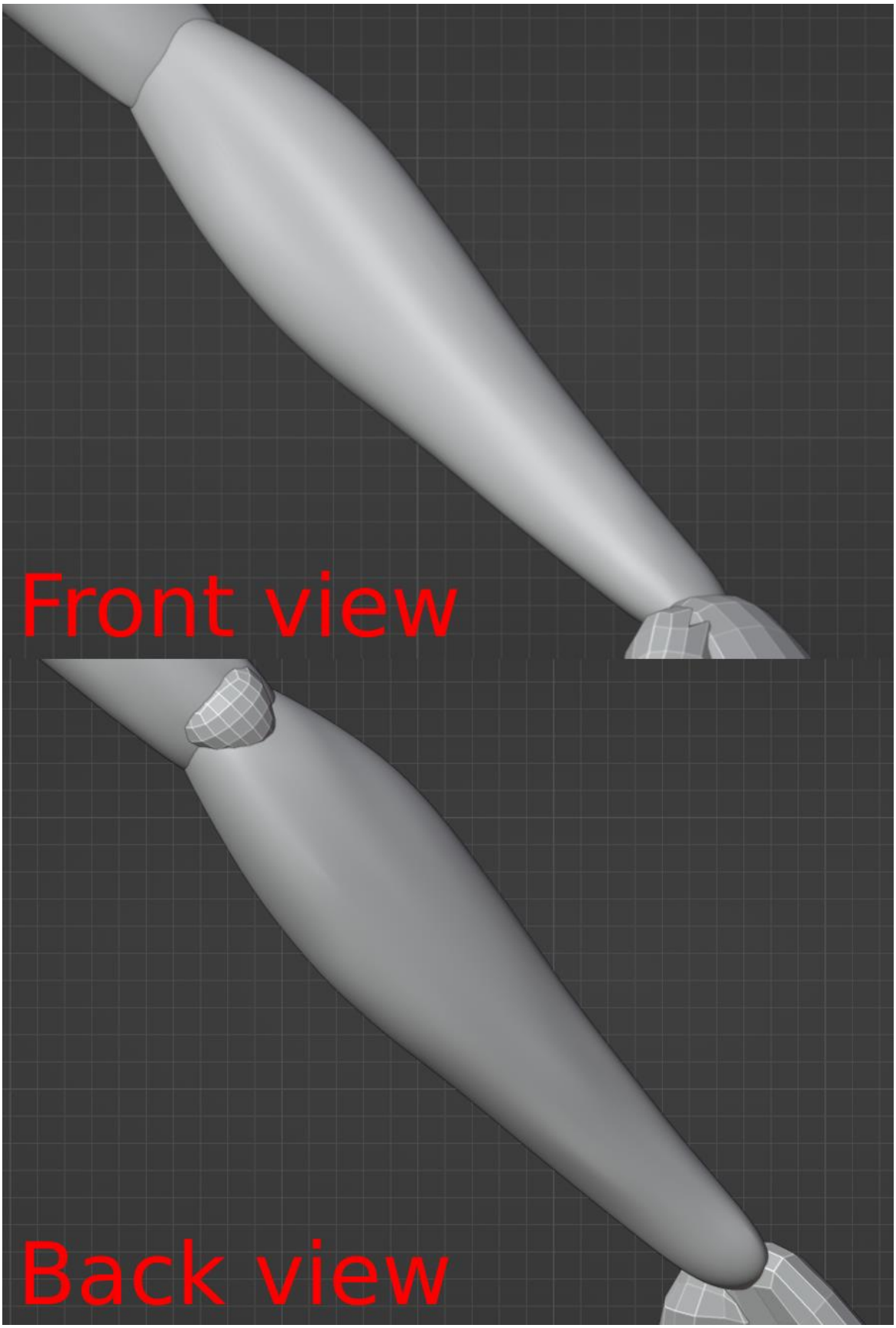
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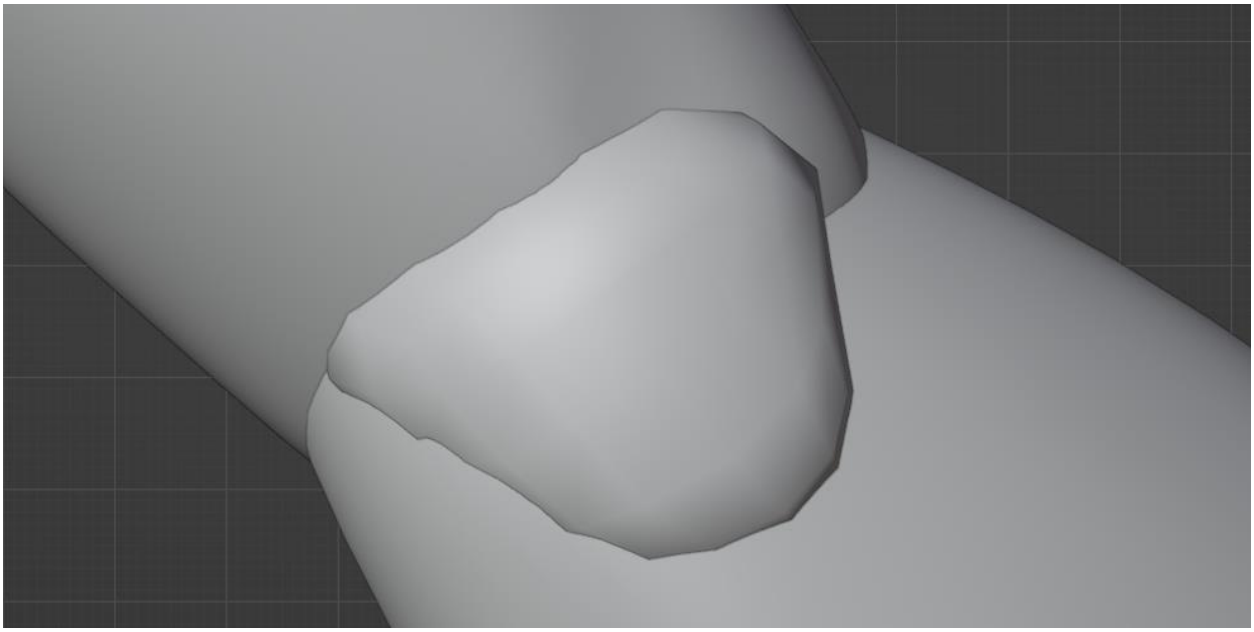
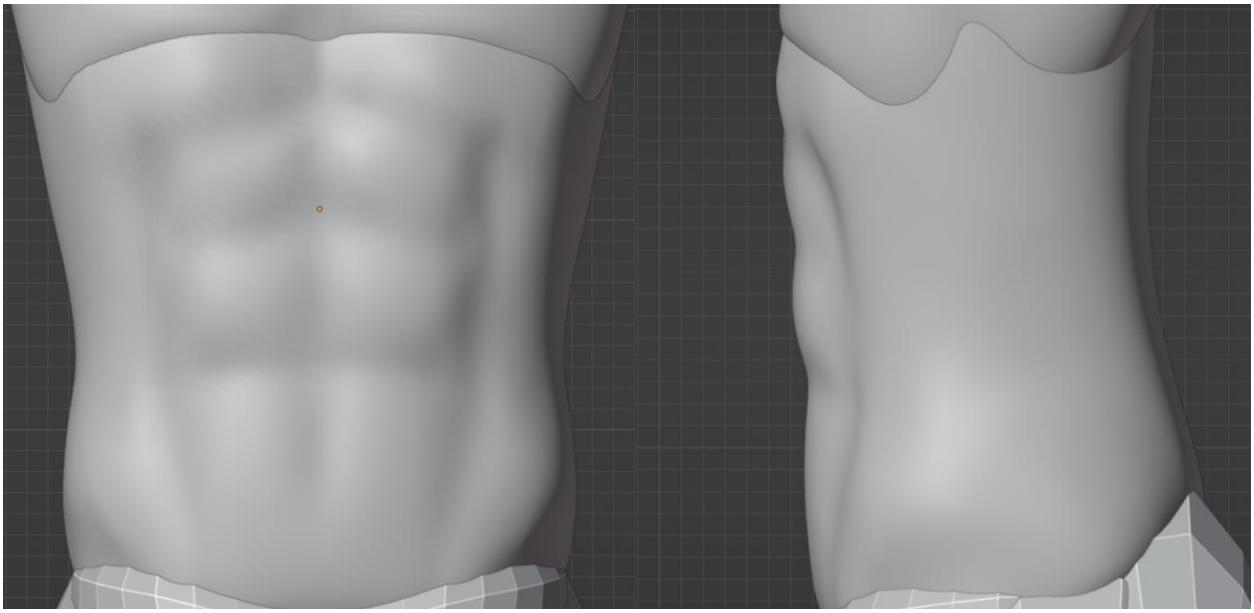
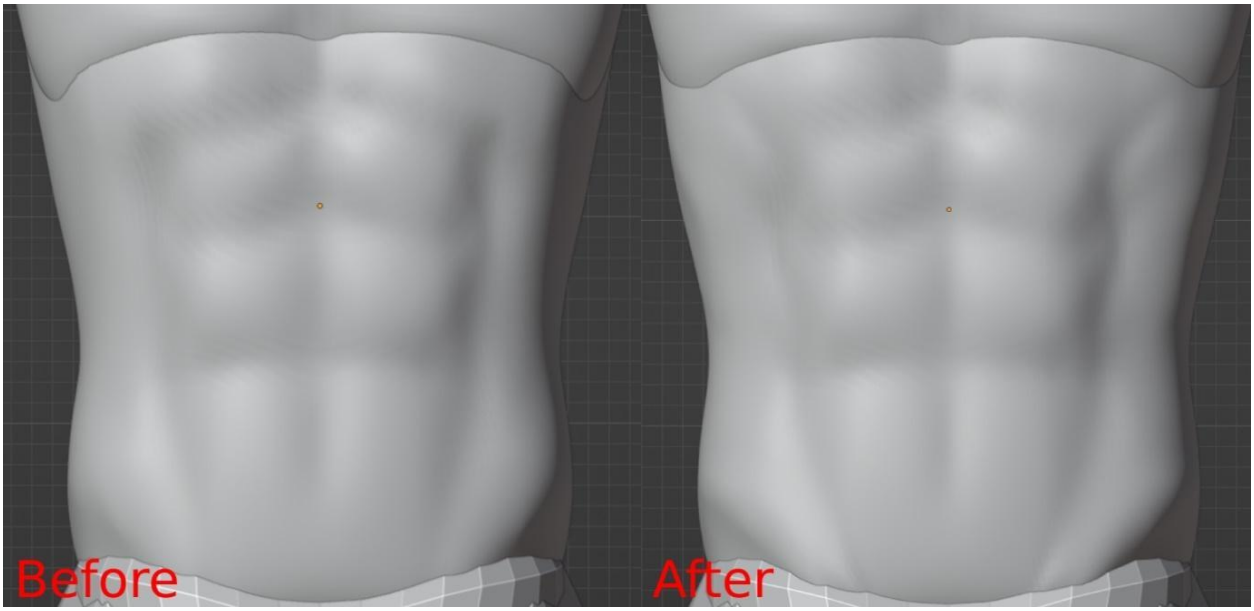
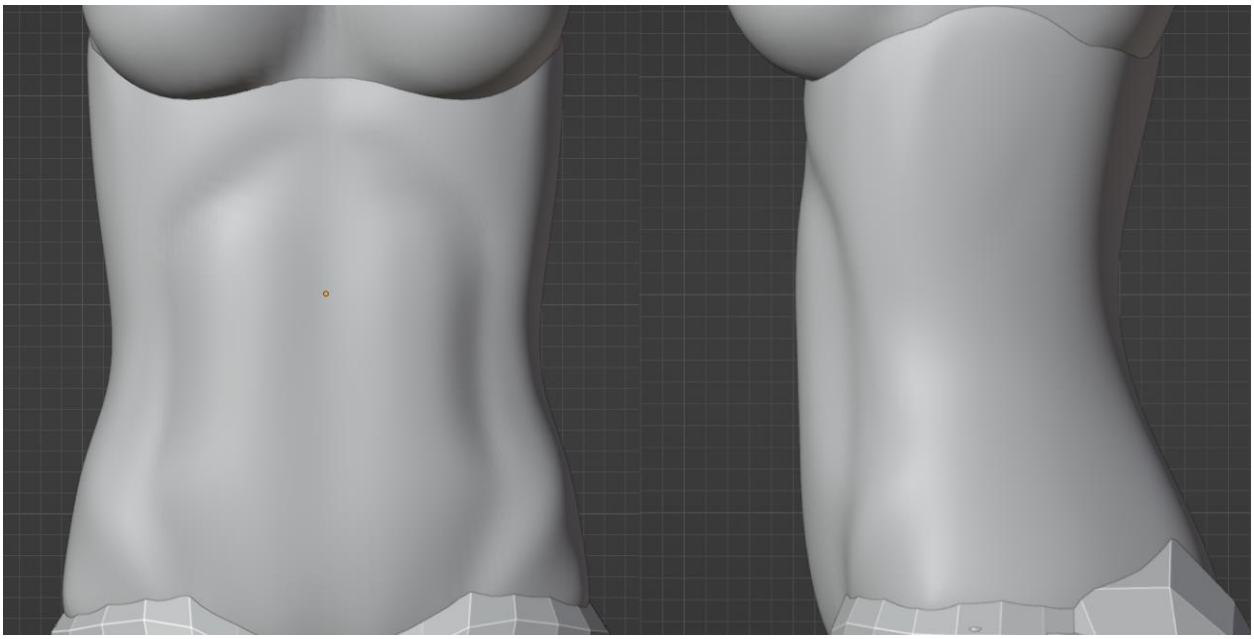
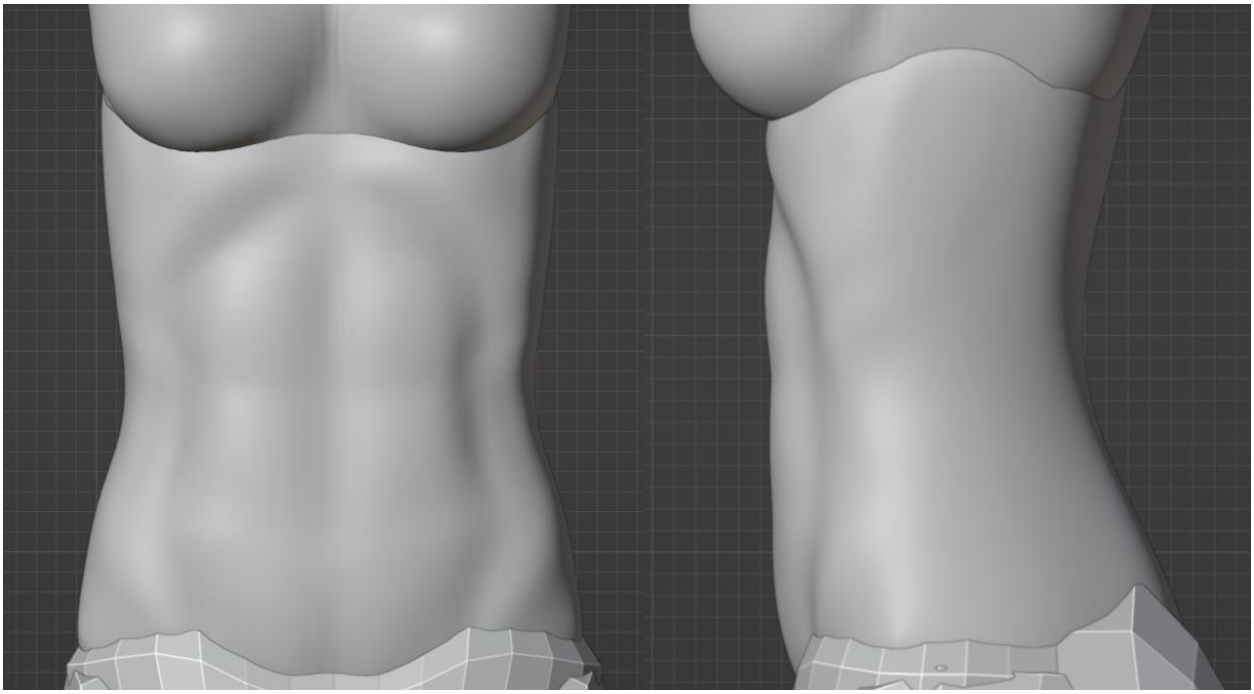
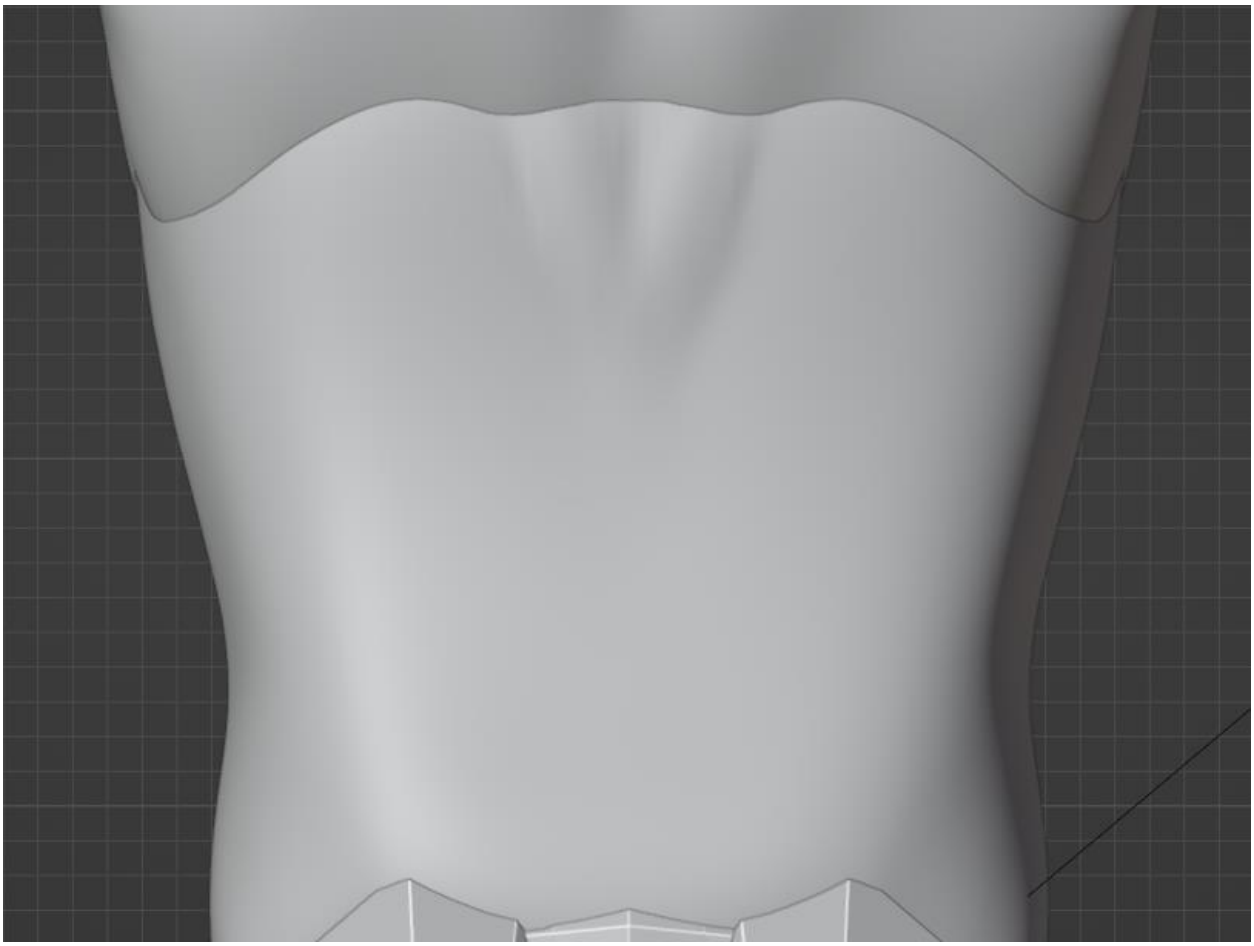


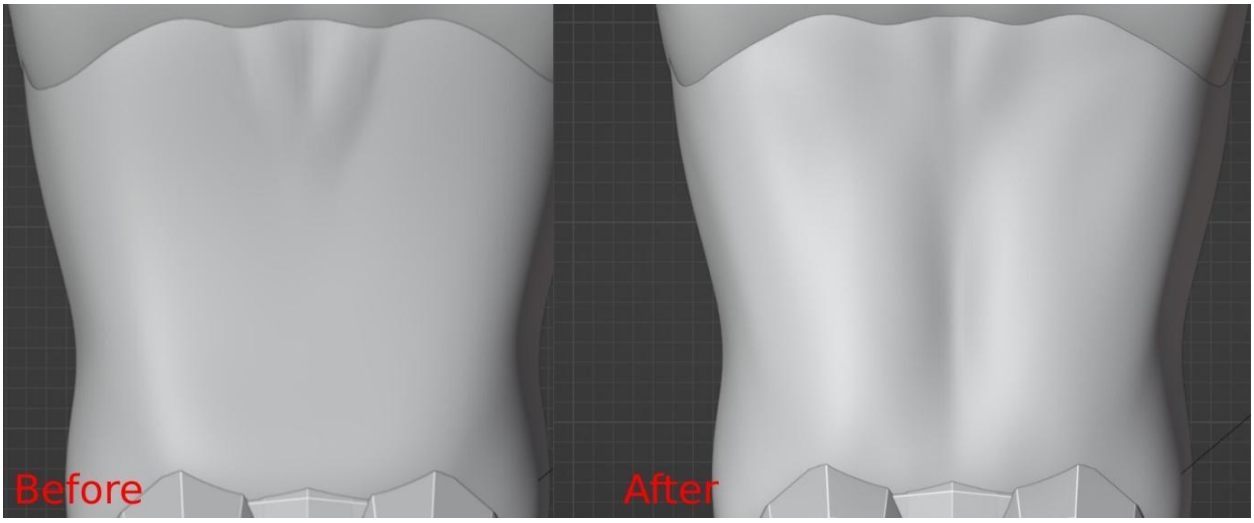


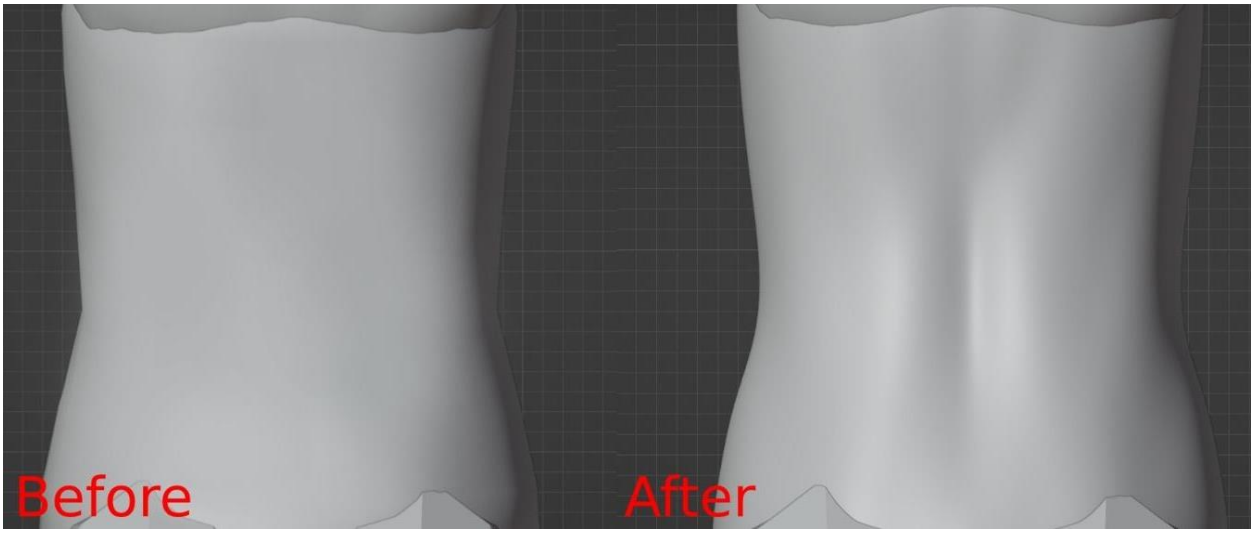

Before
After

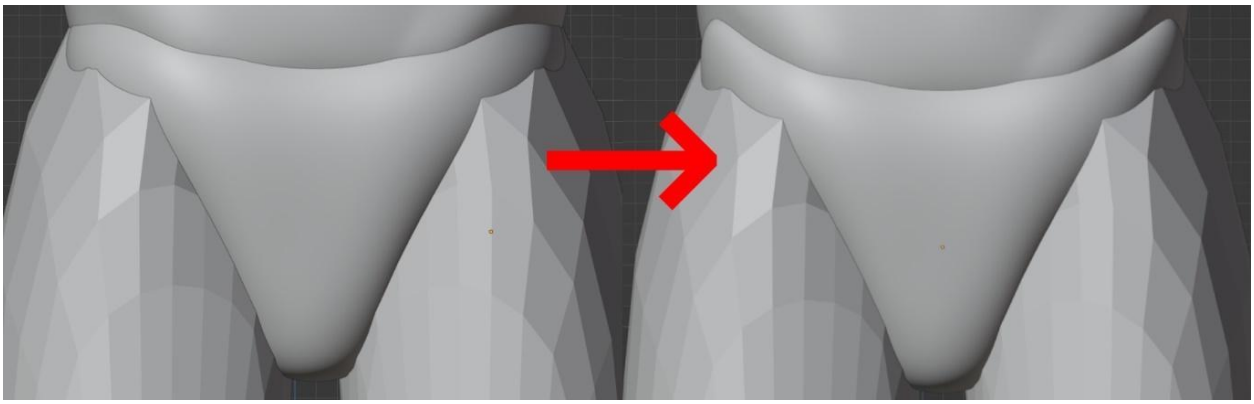


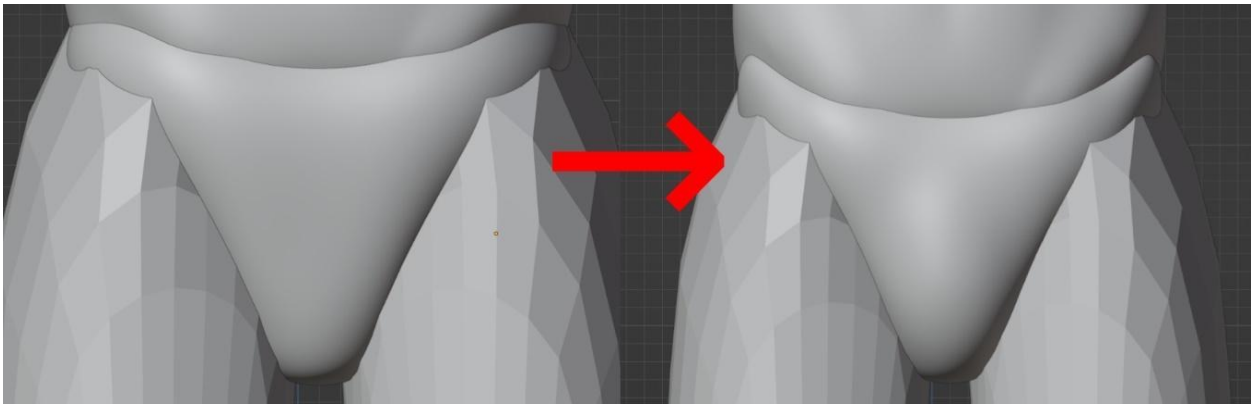


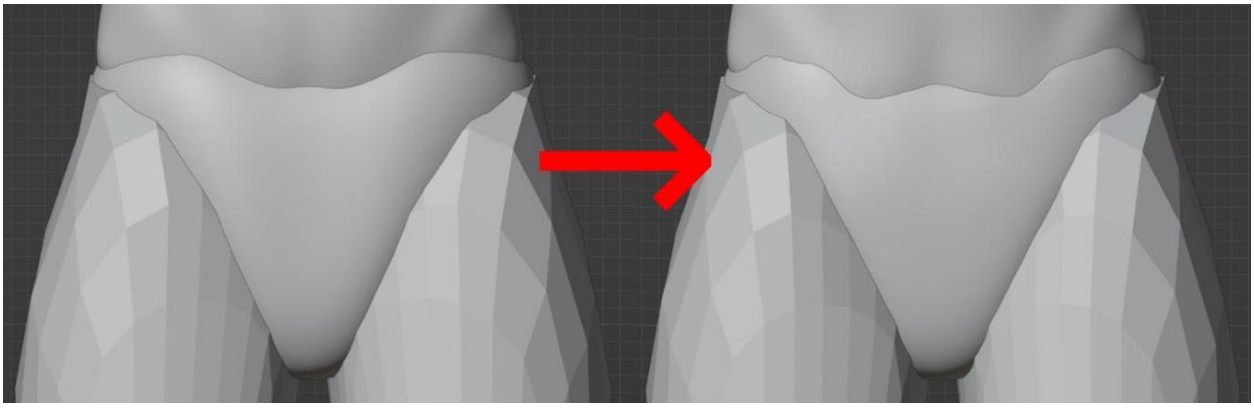


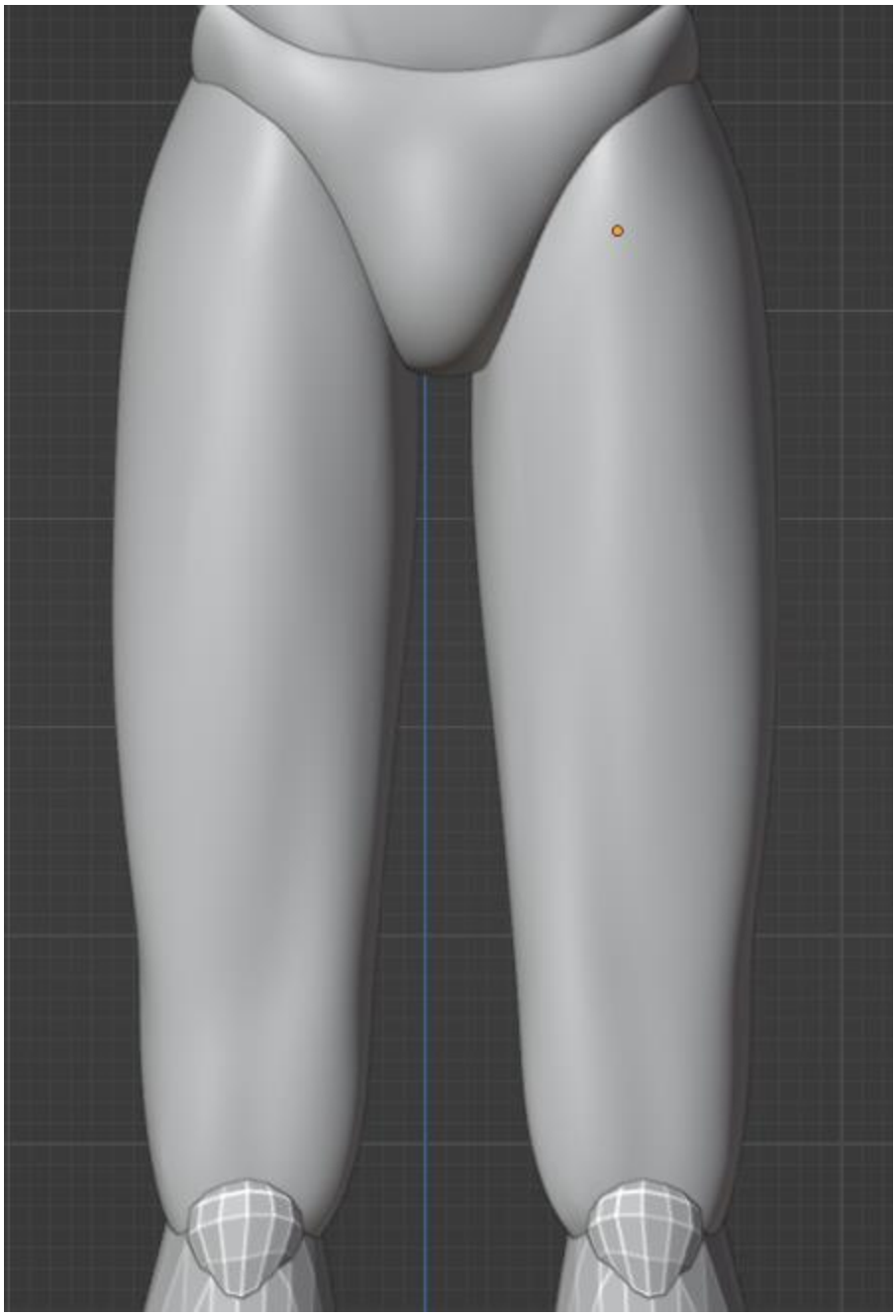

Before
After

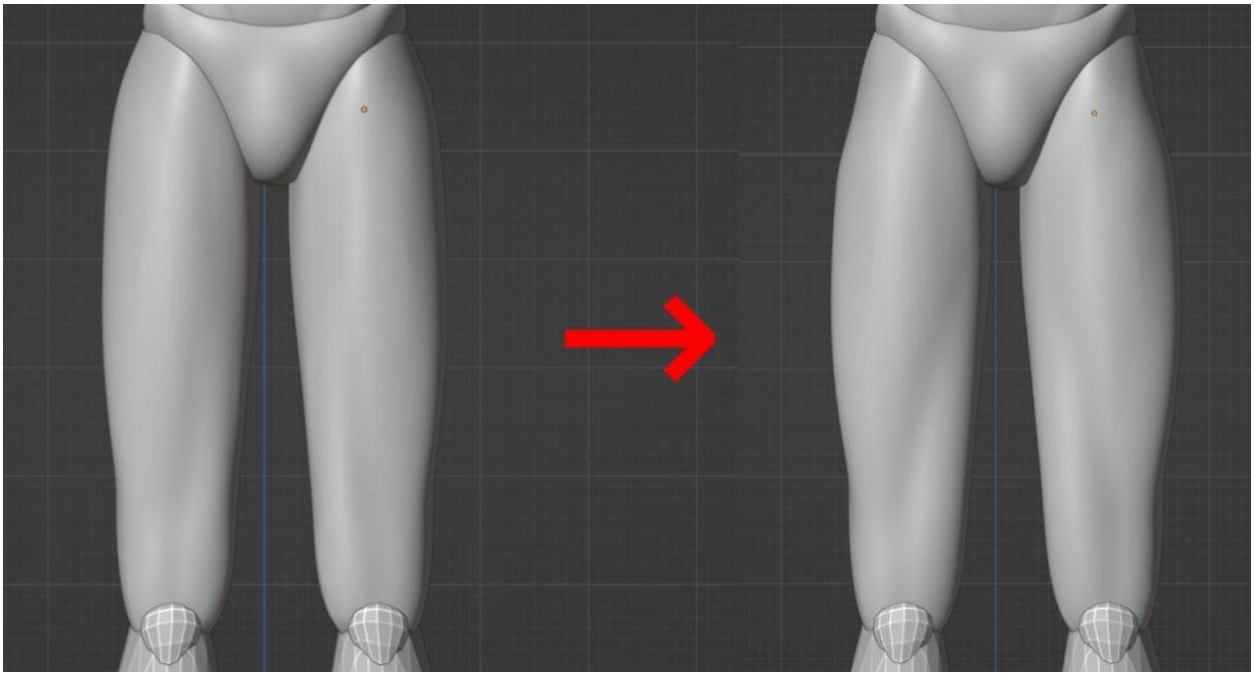

Before
After

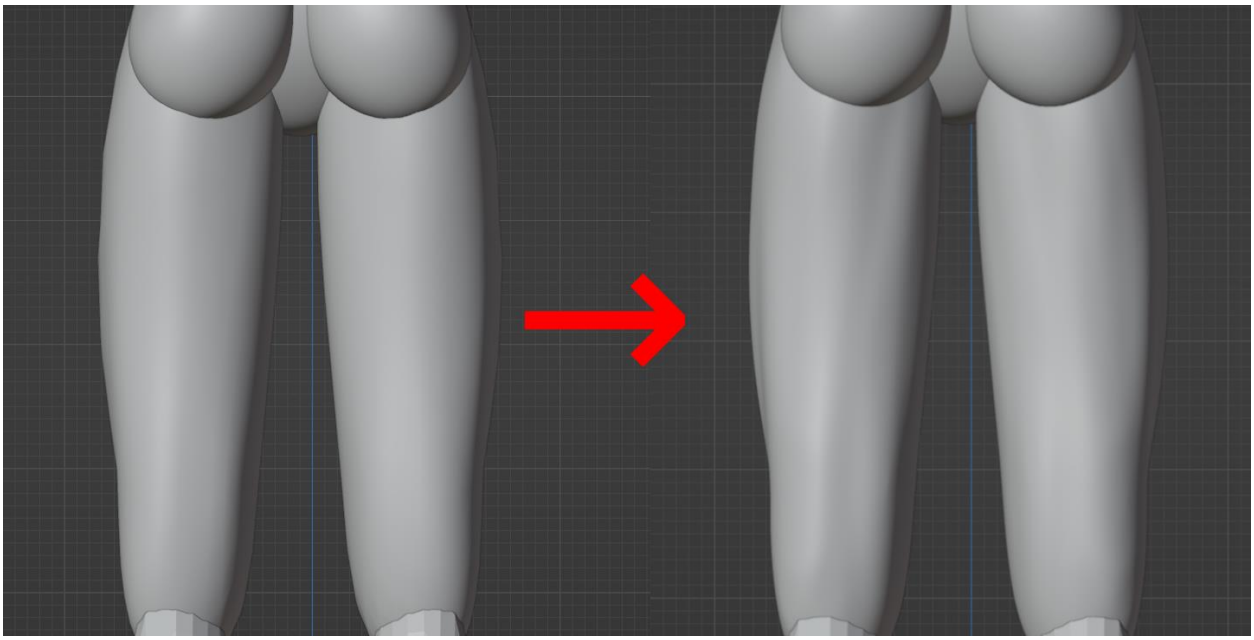


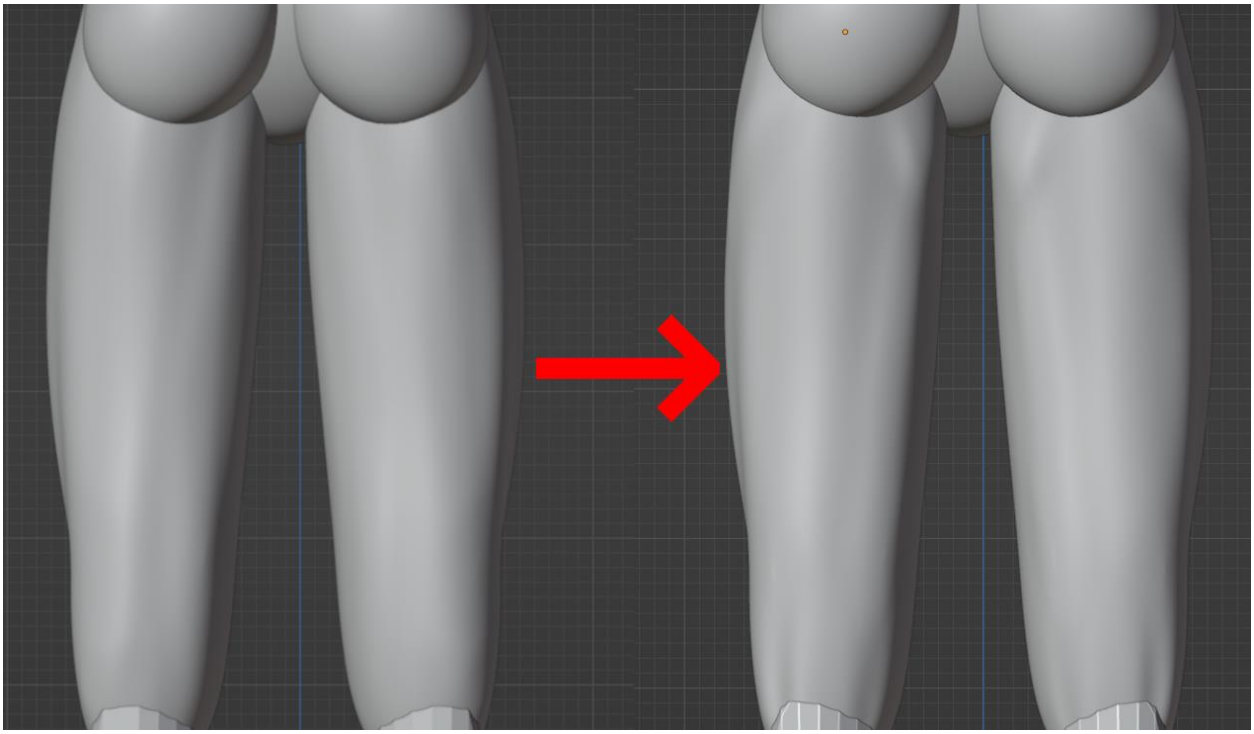


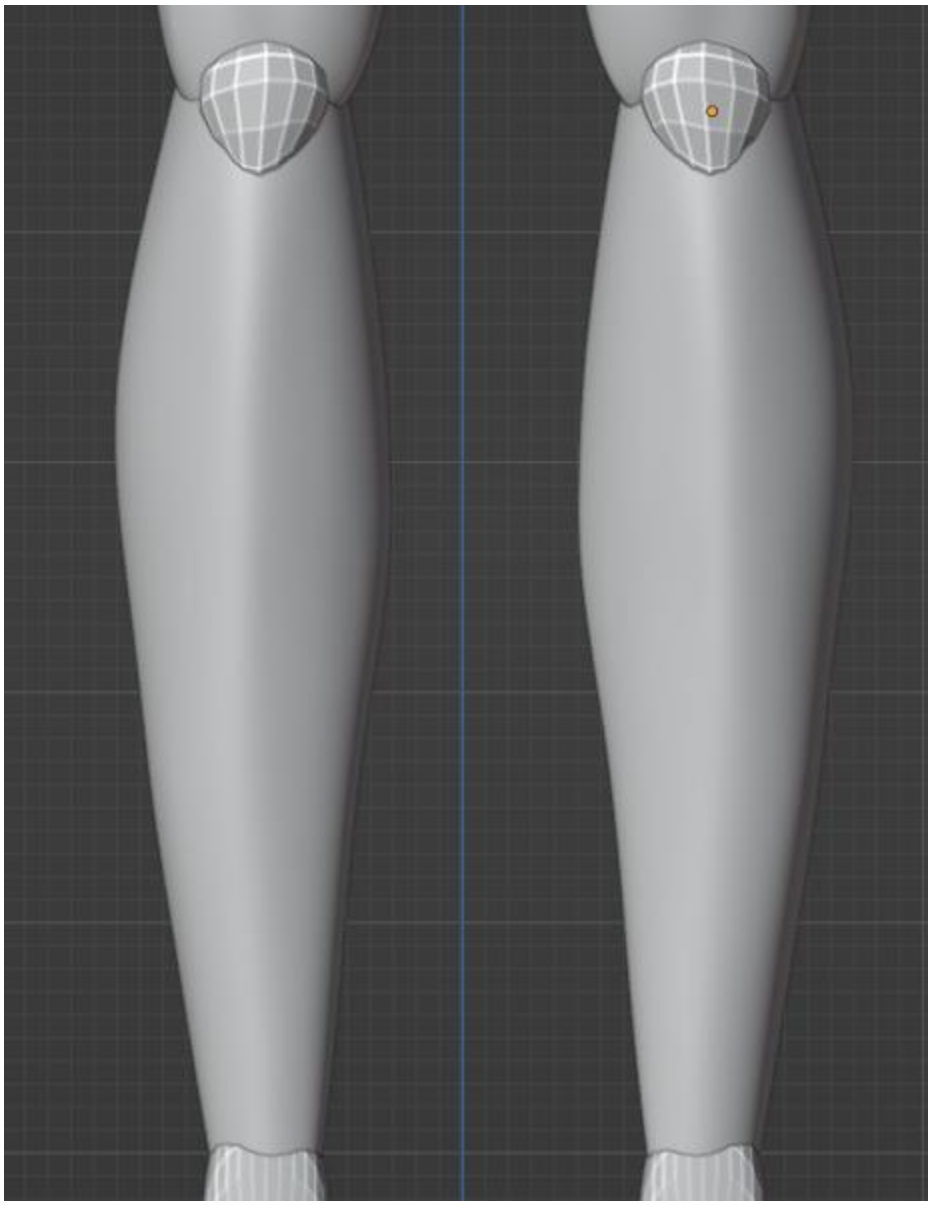


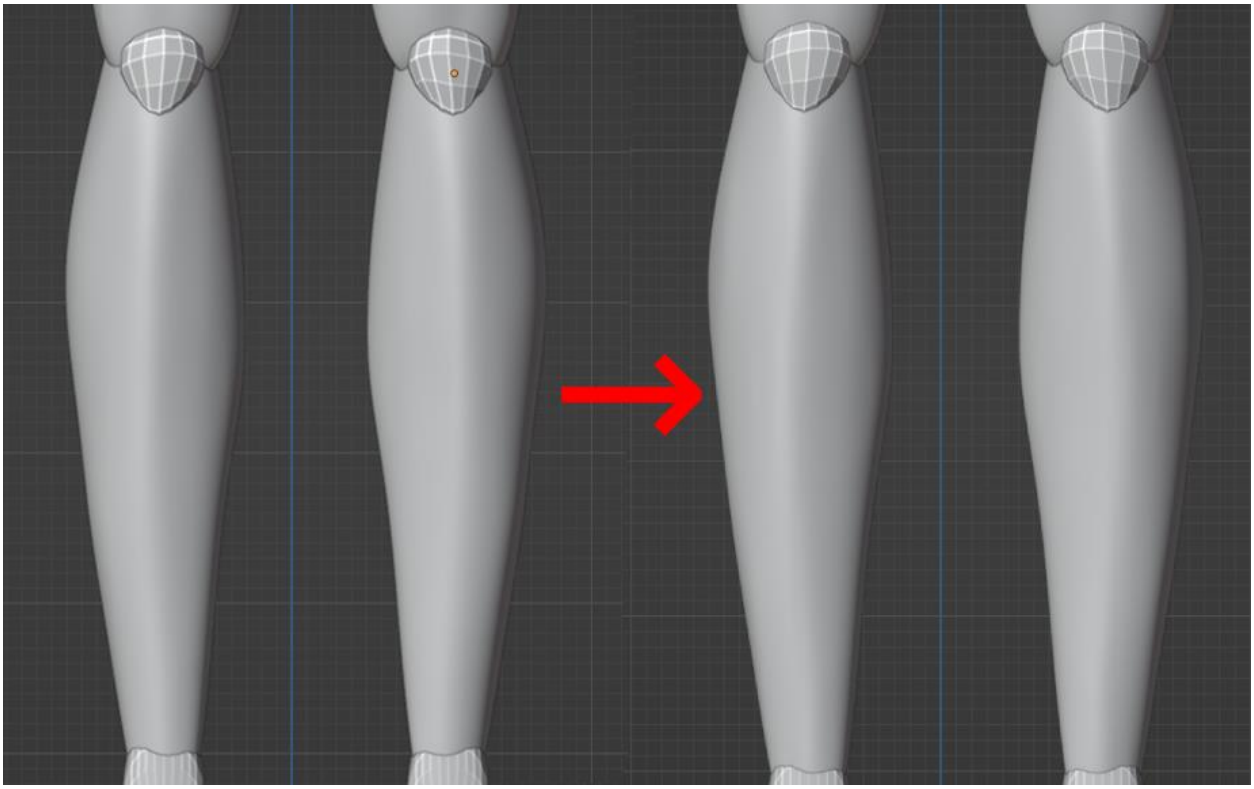


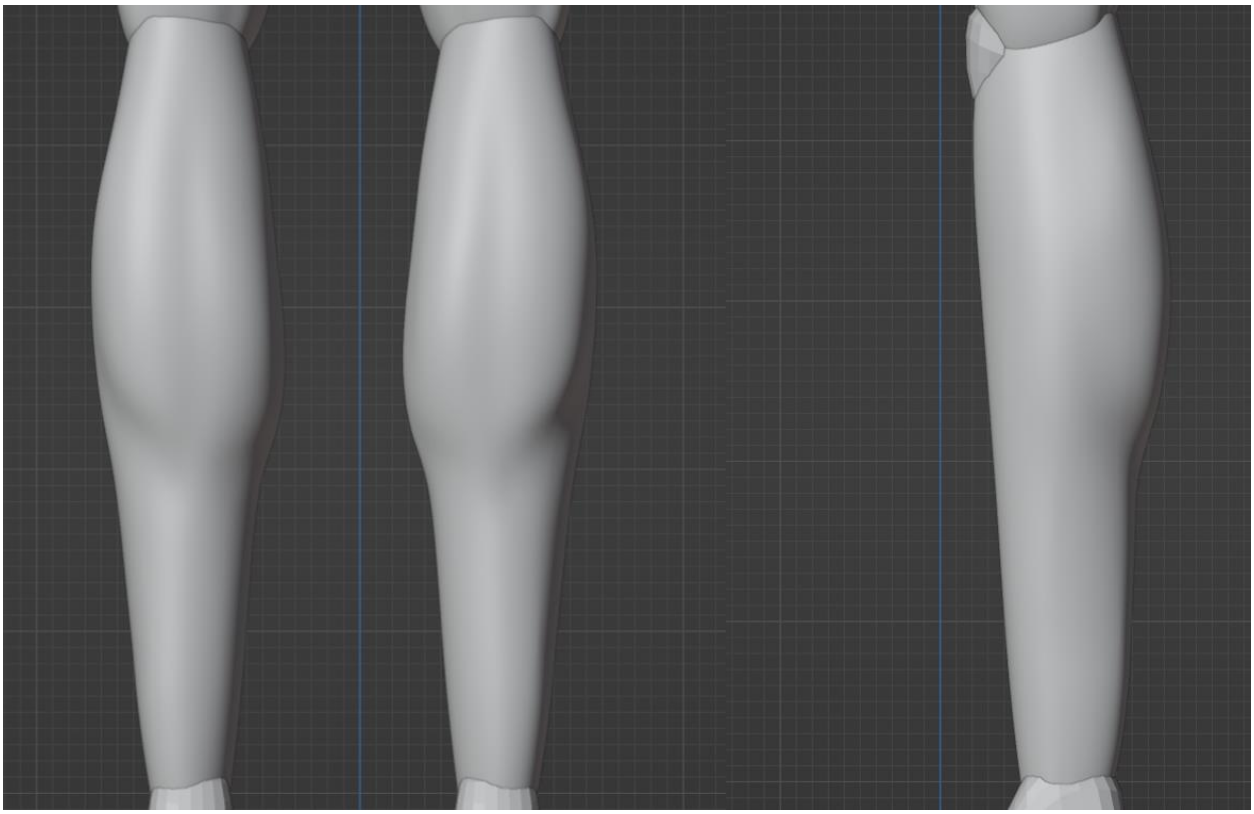


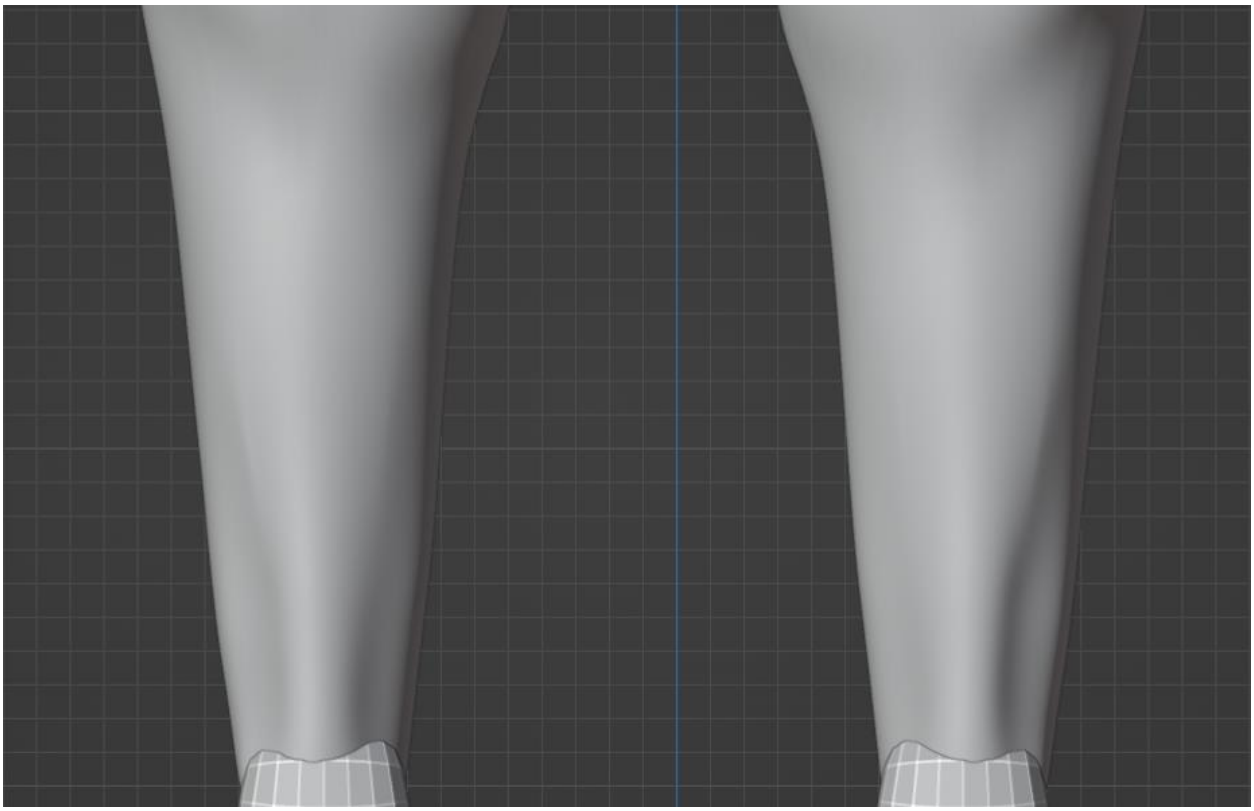


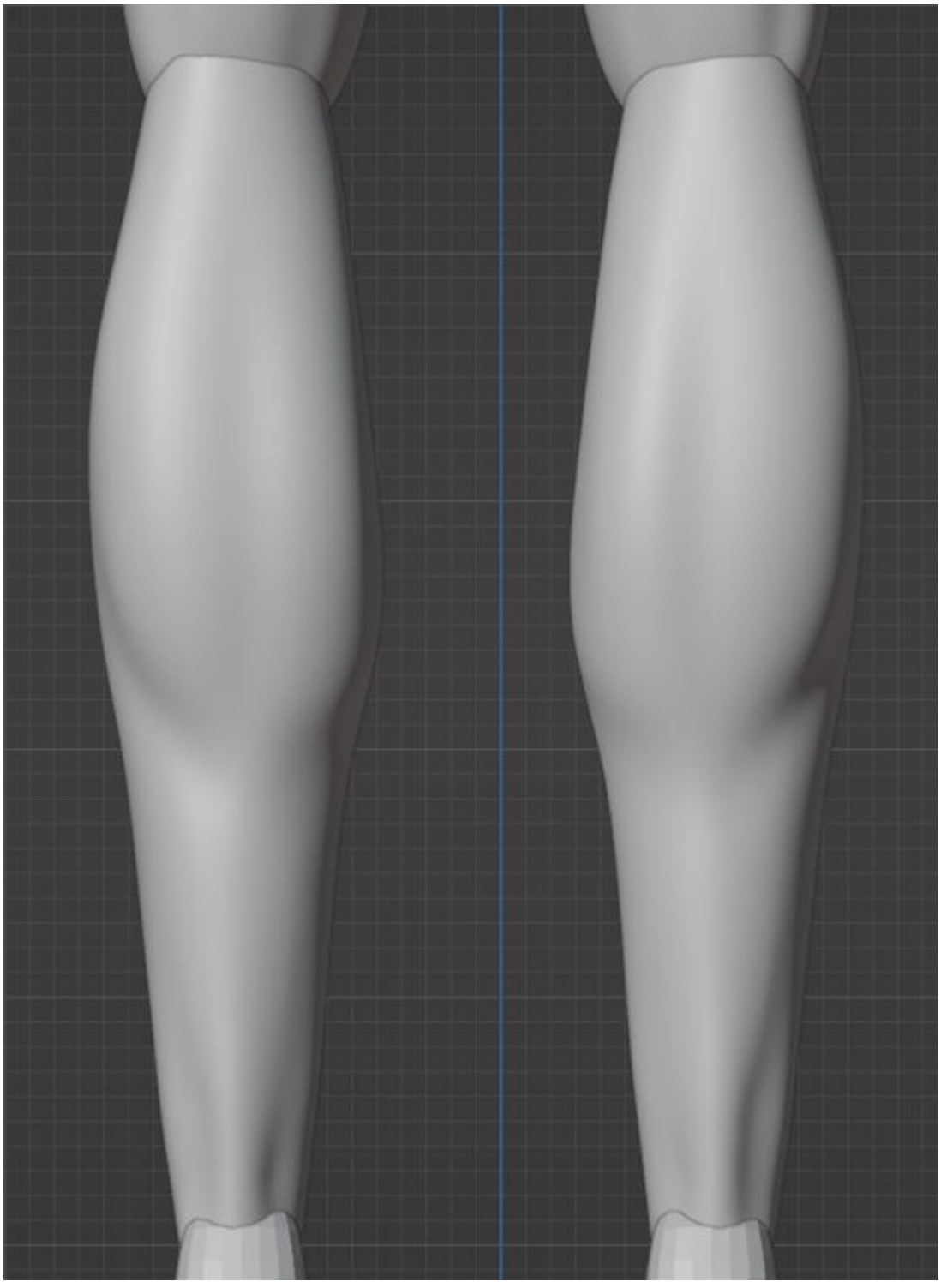


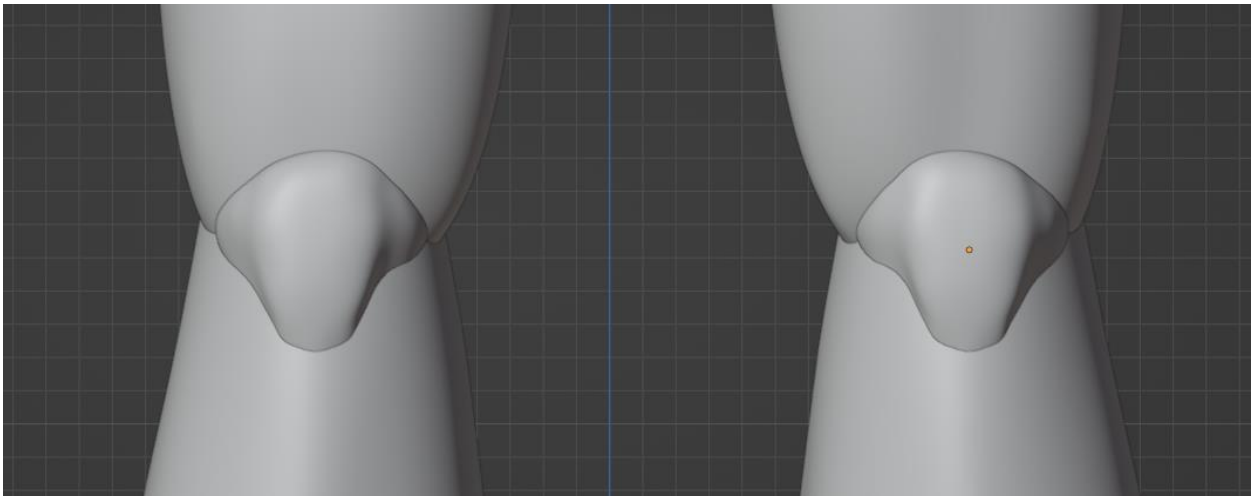


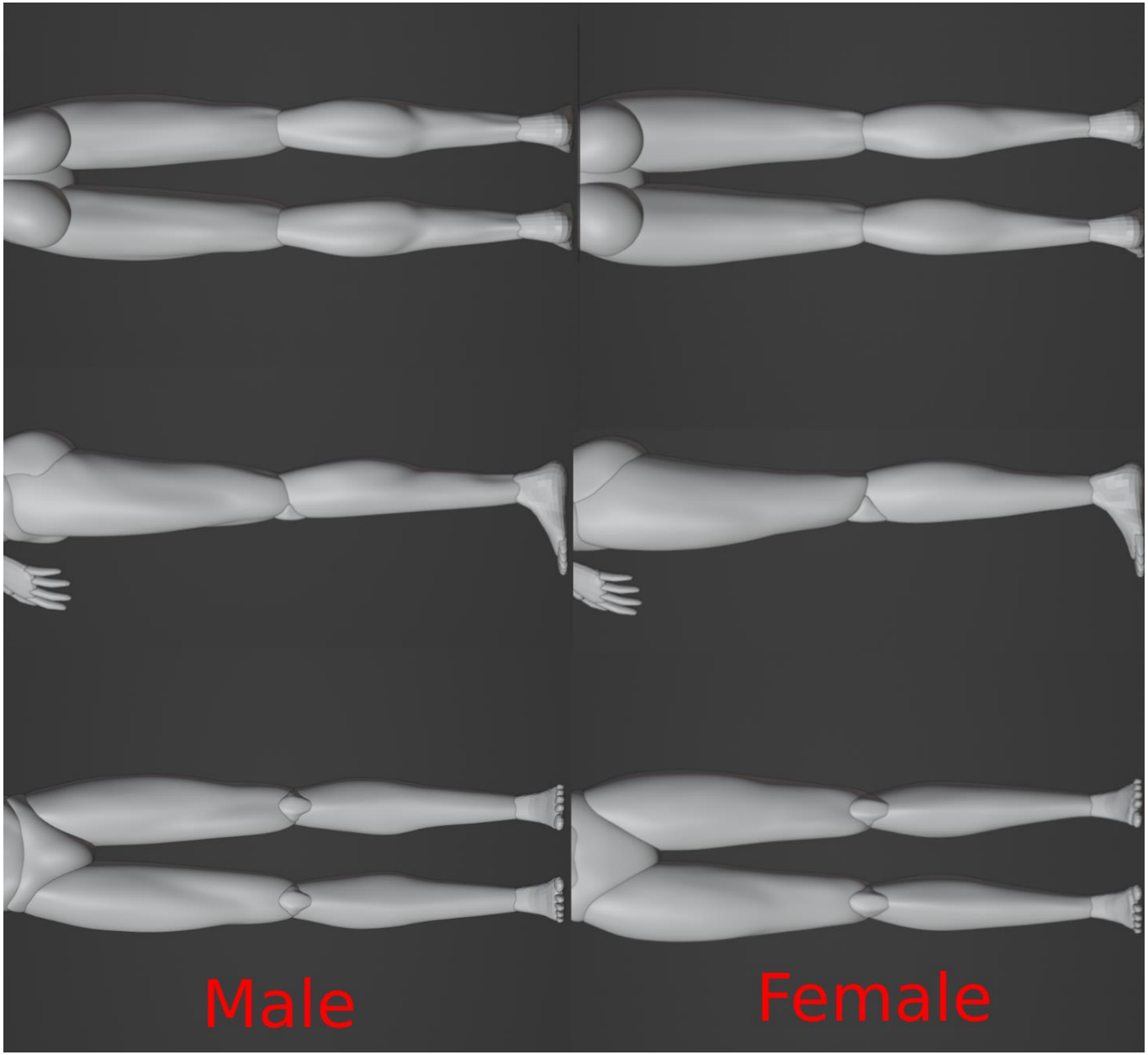


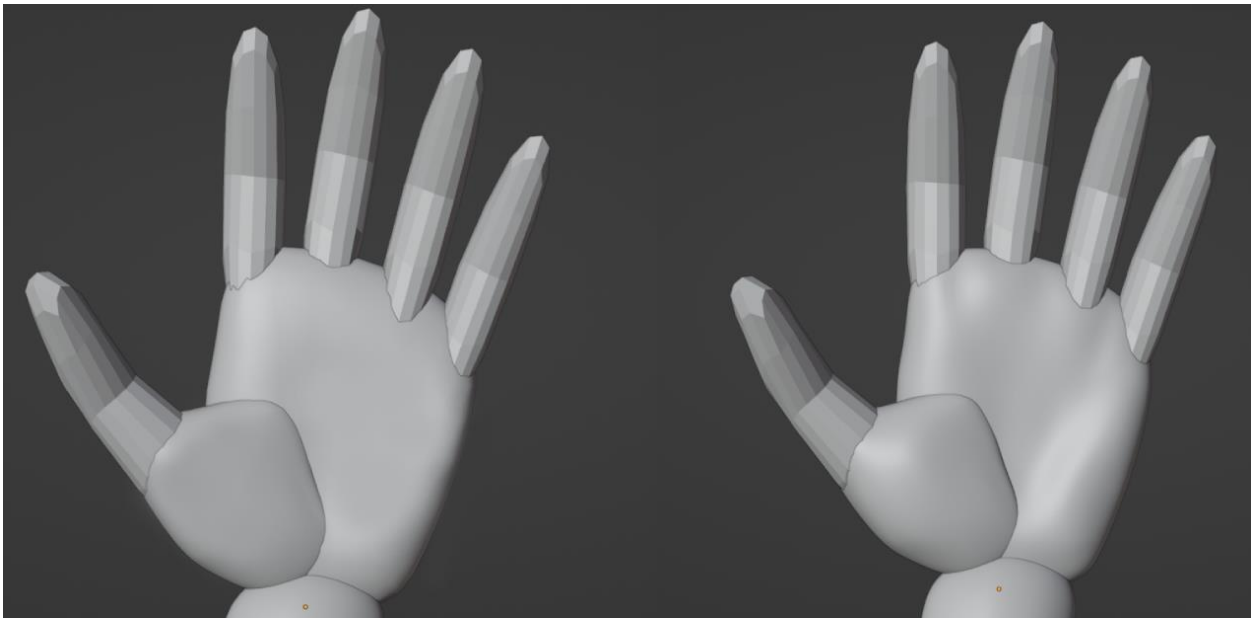


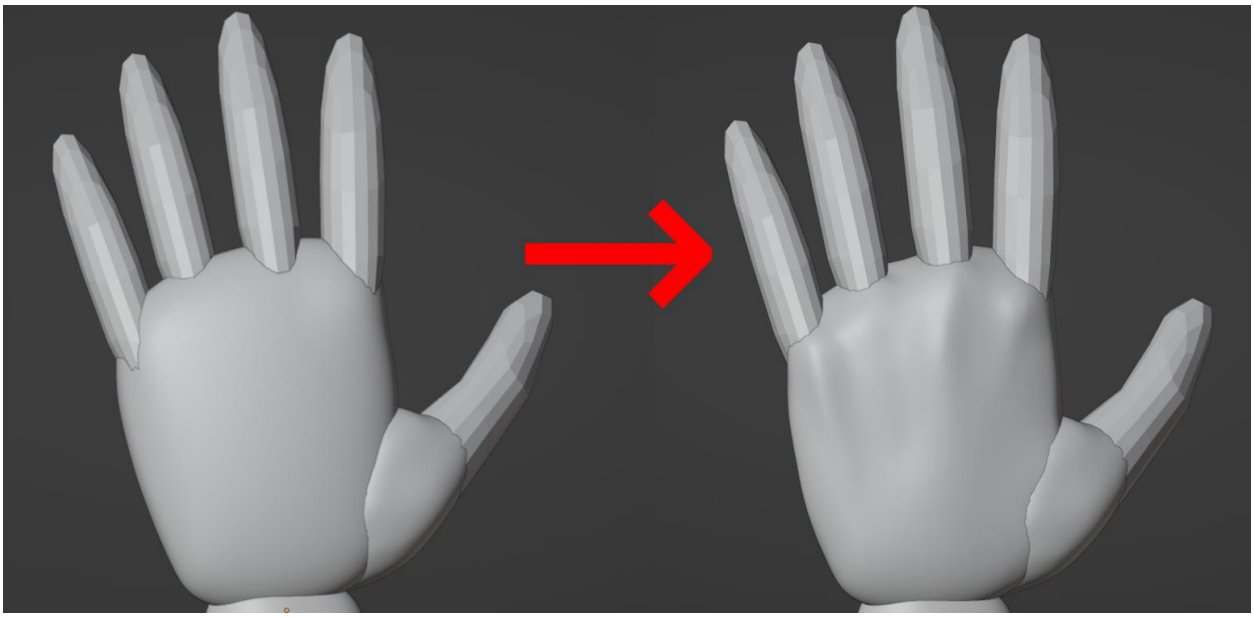


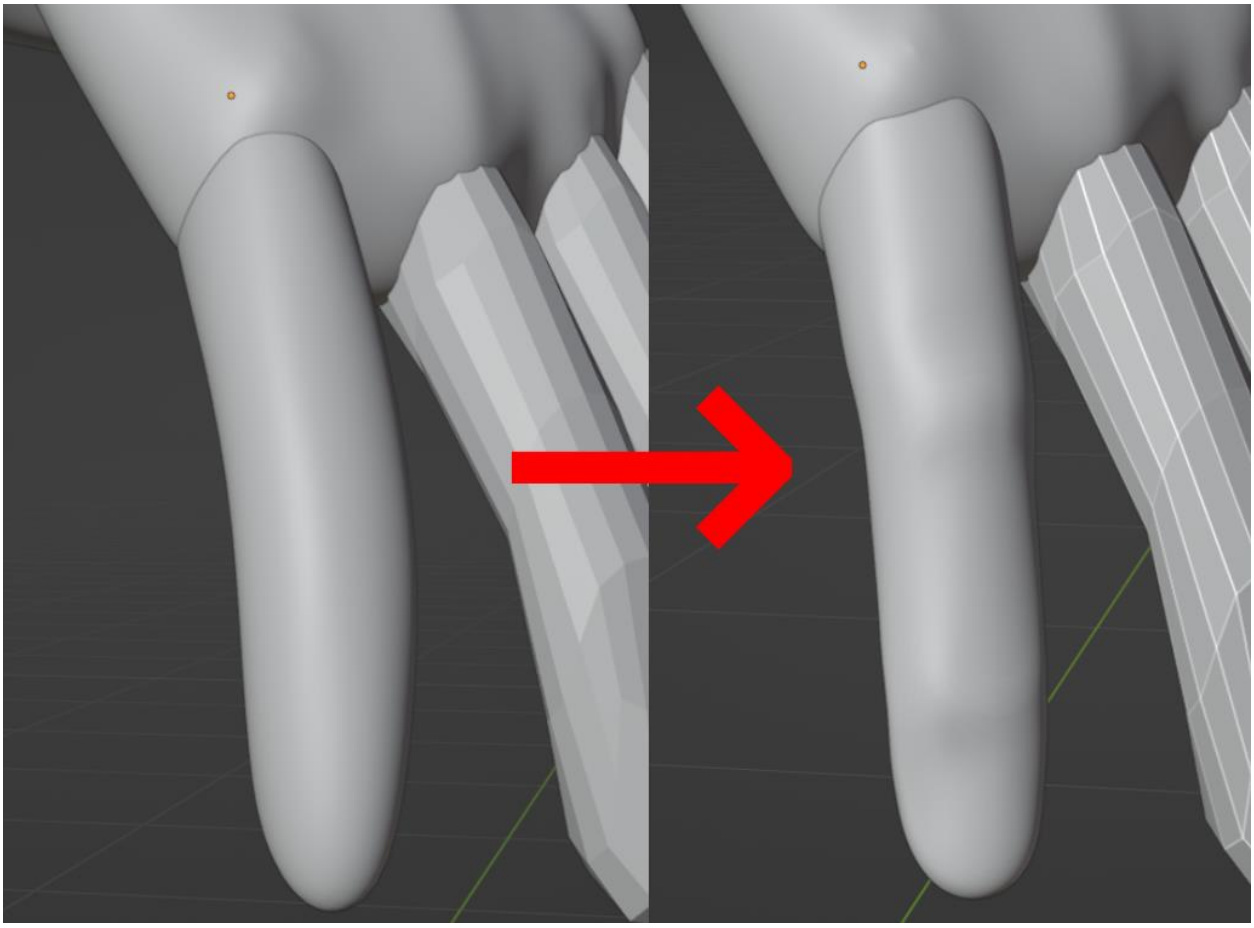


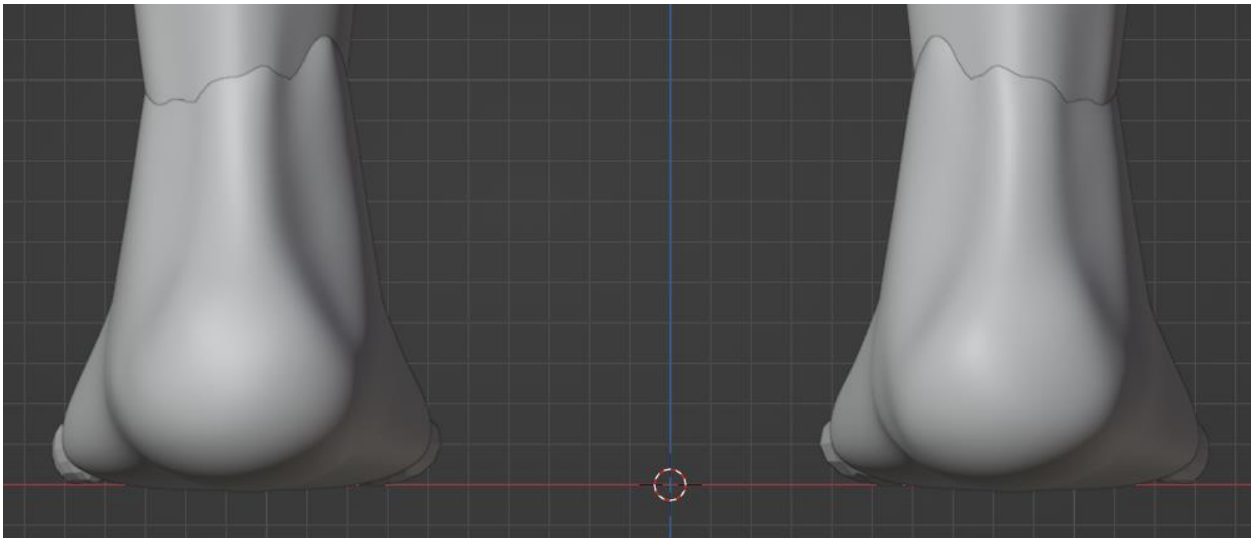


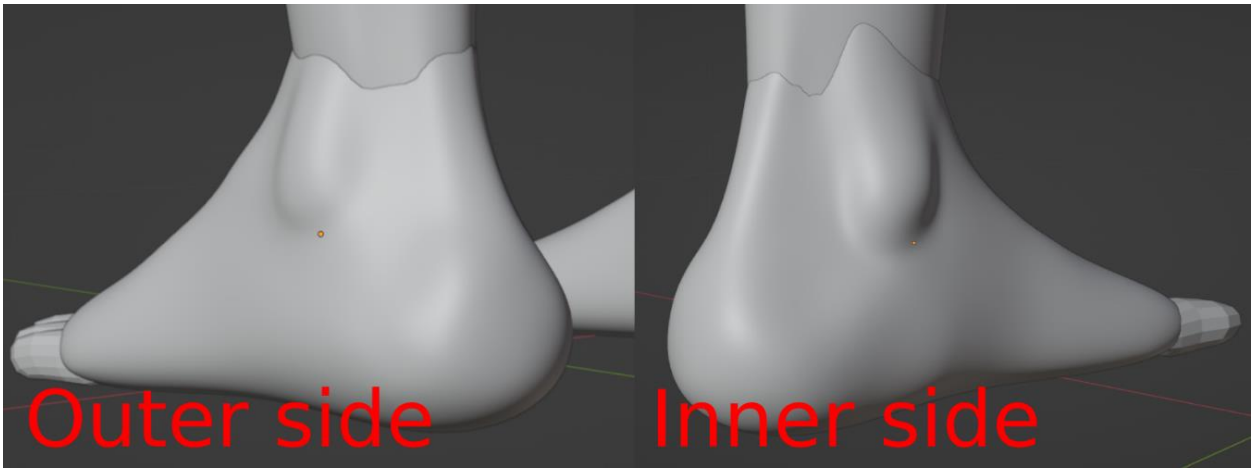

Male
Female

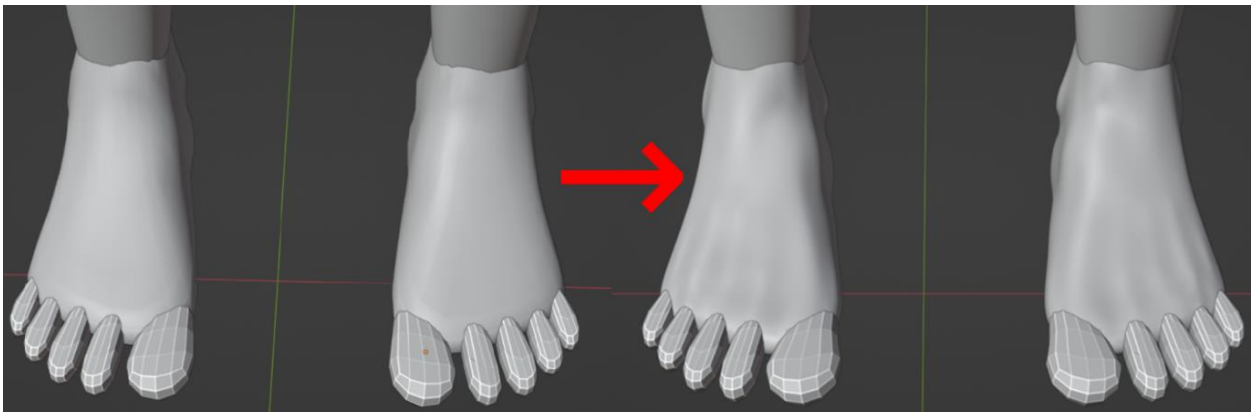


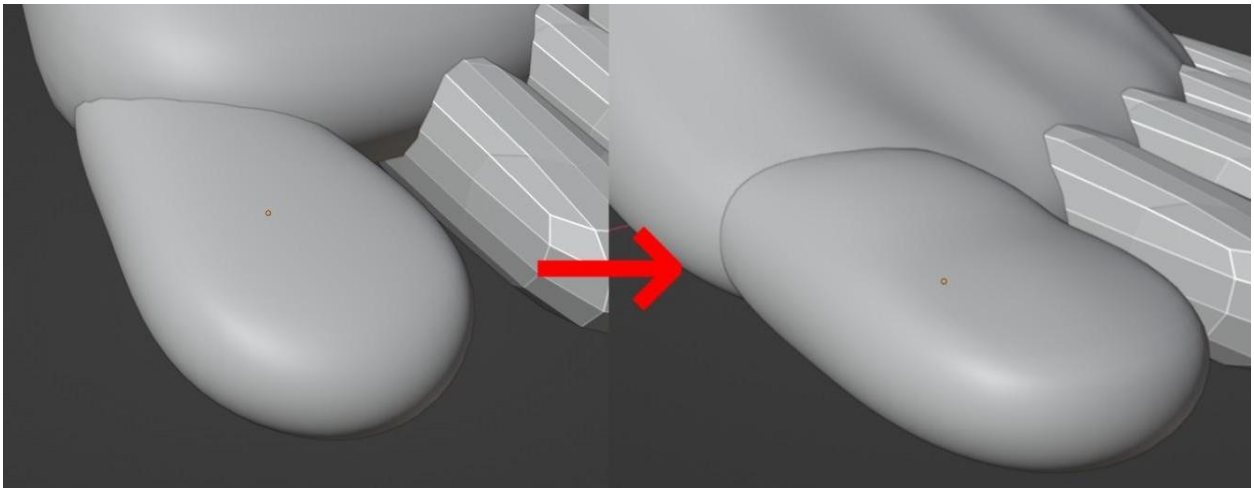


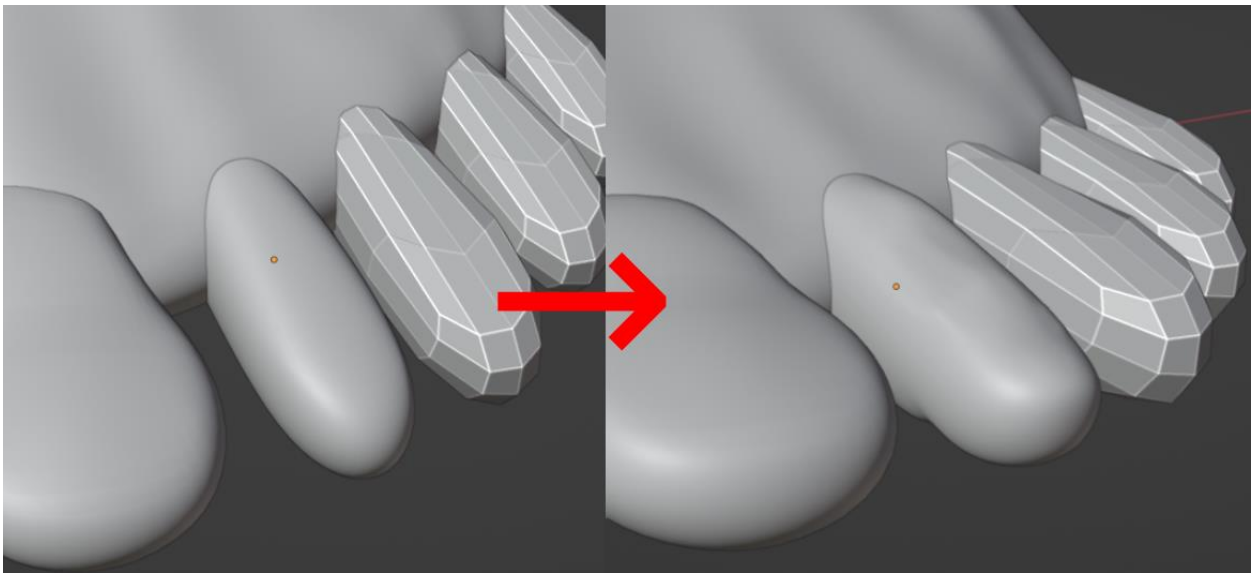


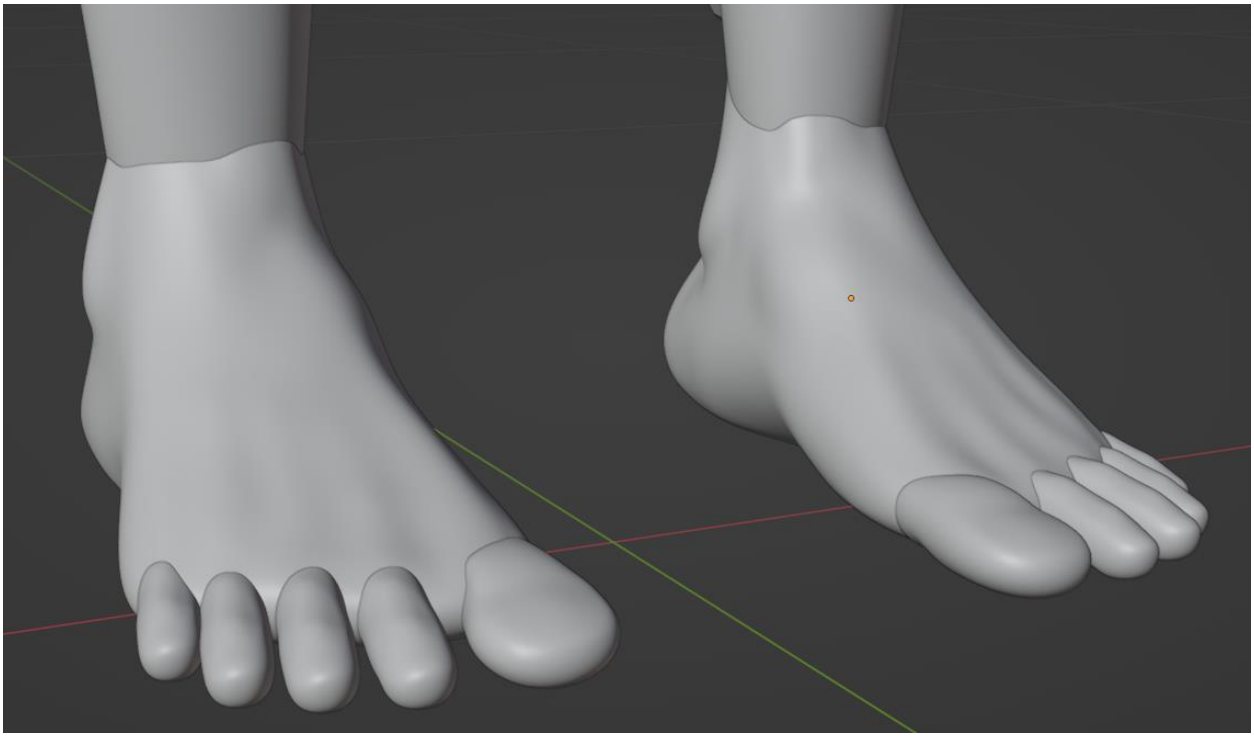


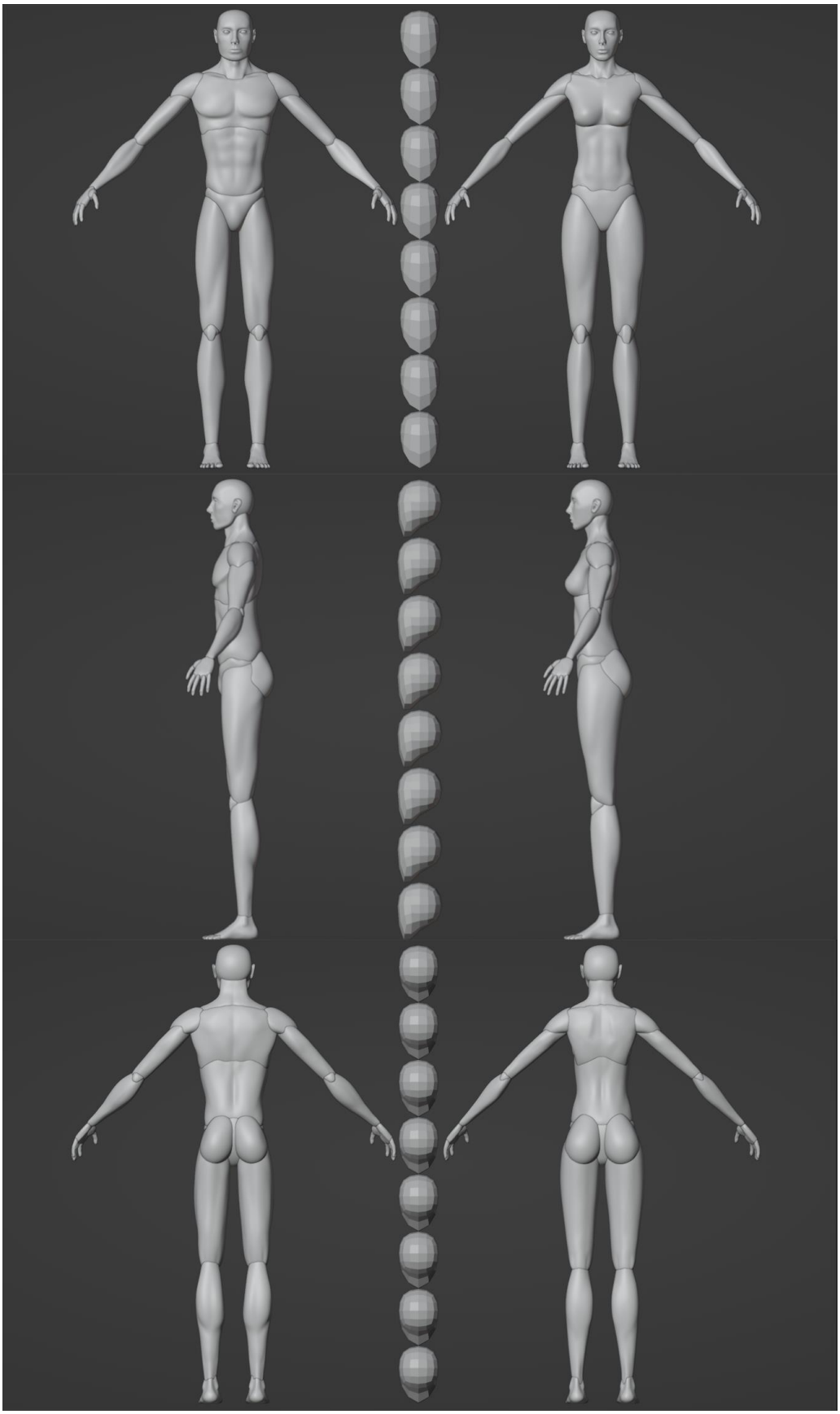

Outer side
Inner side

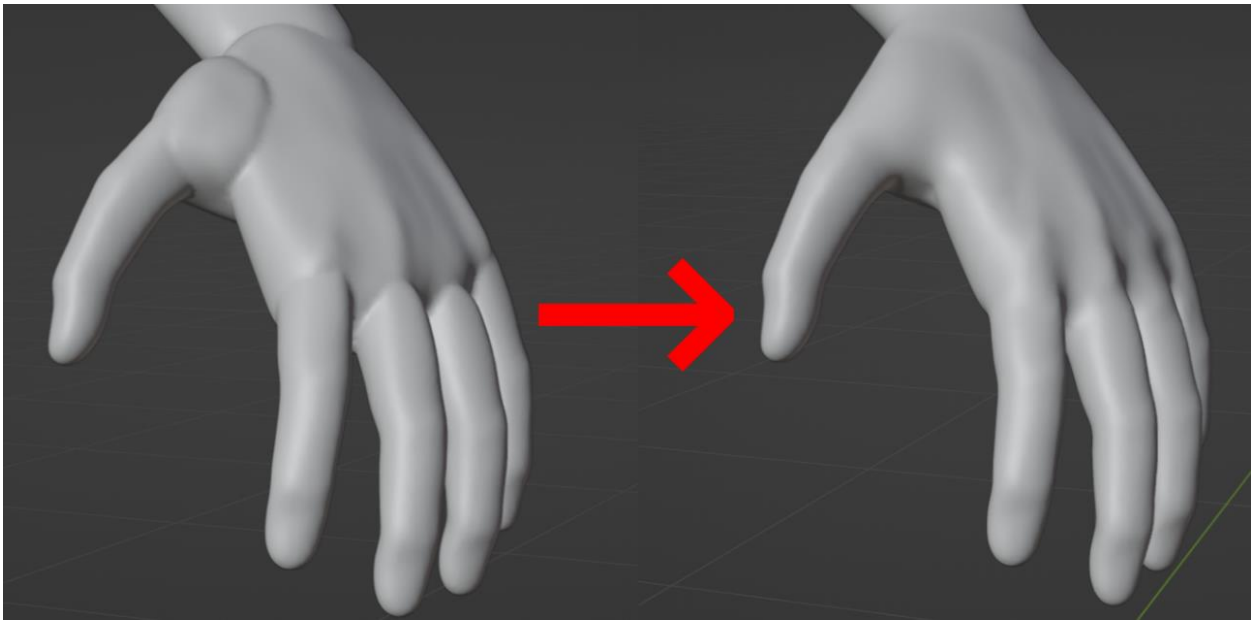


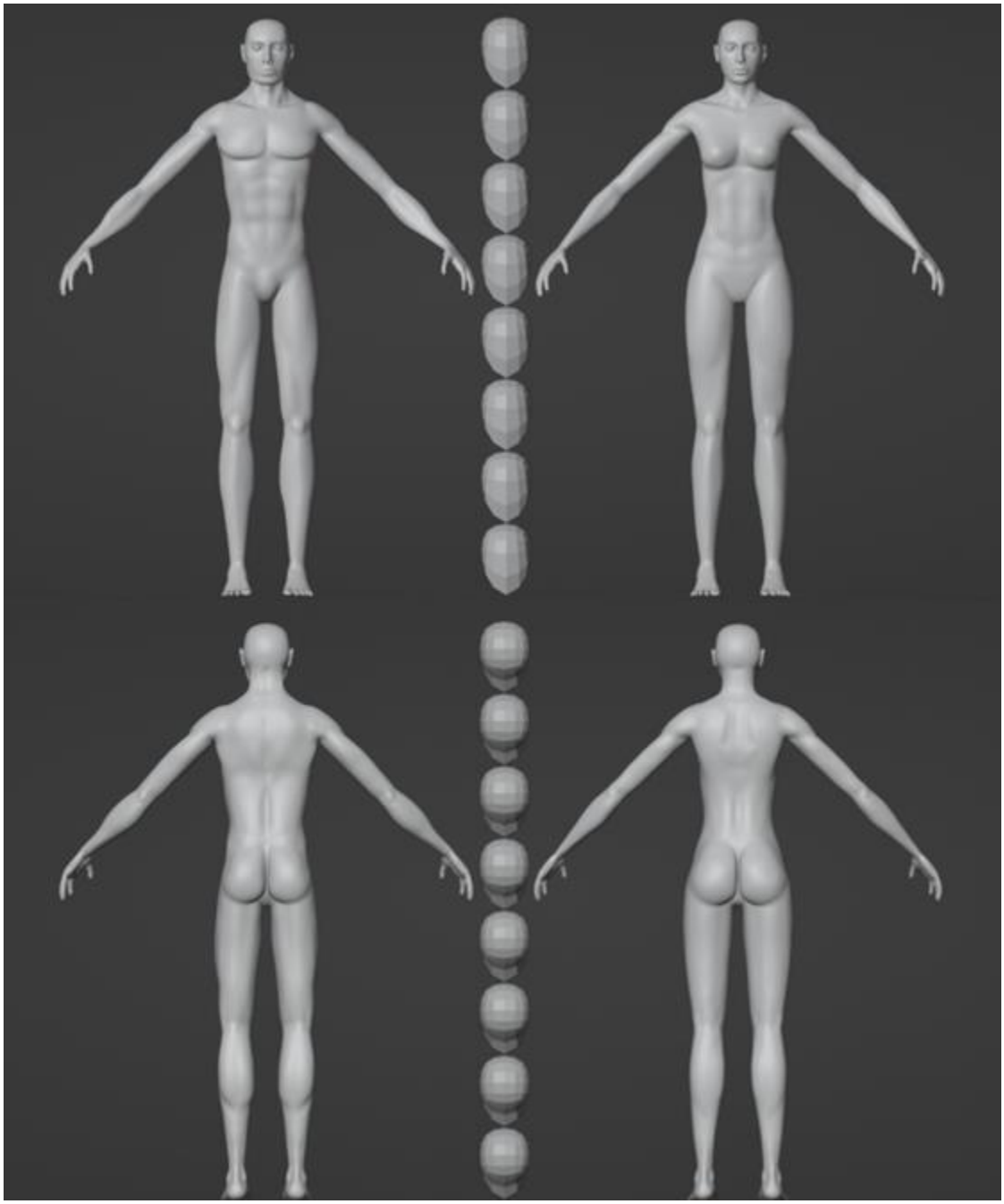




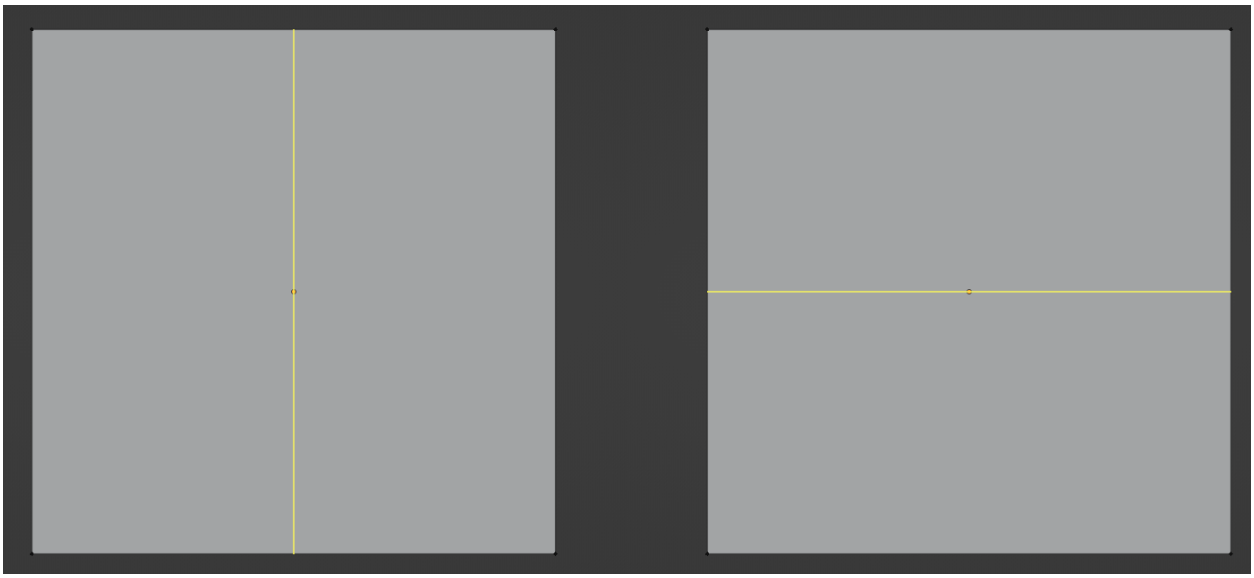


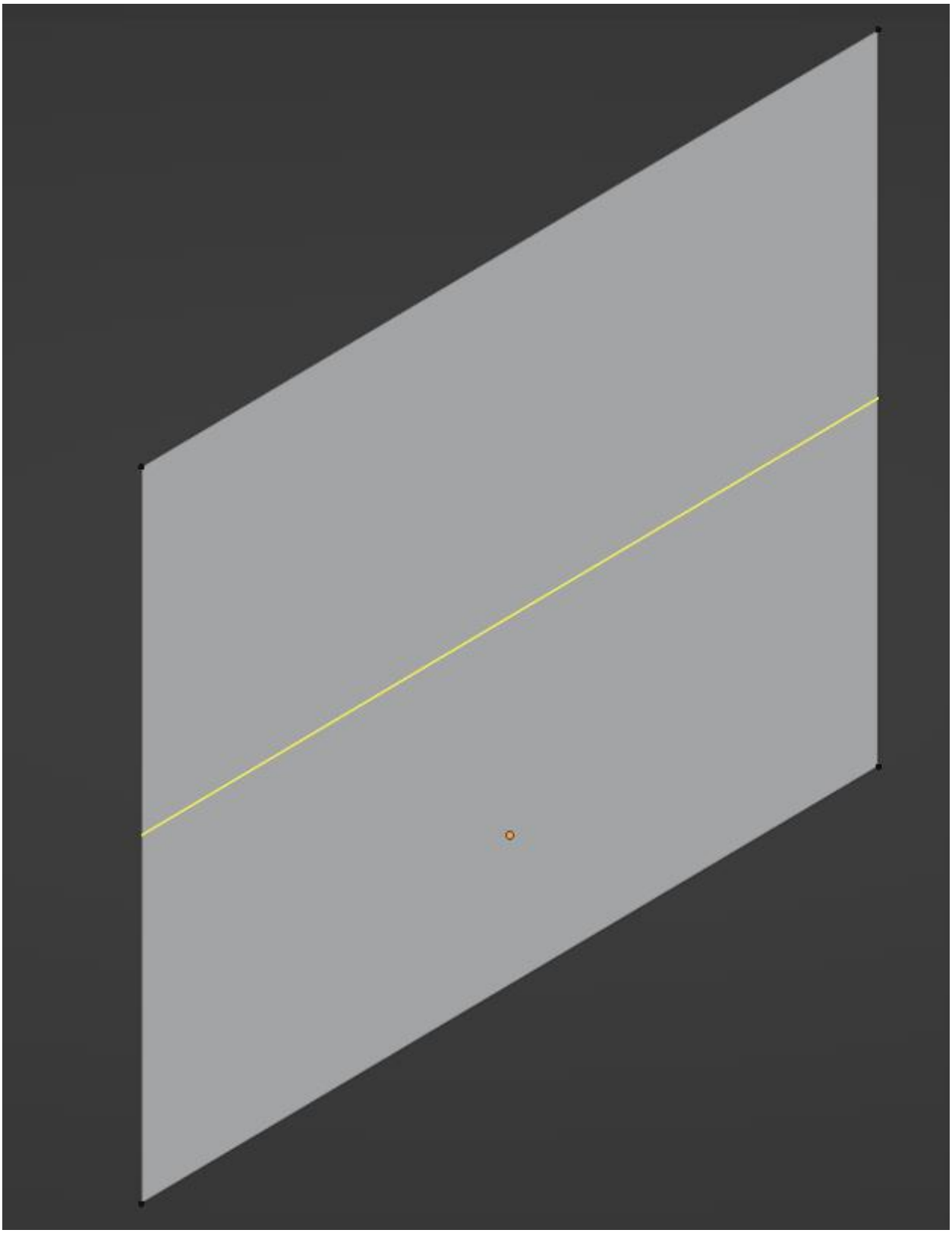


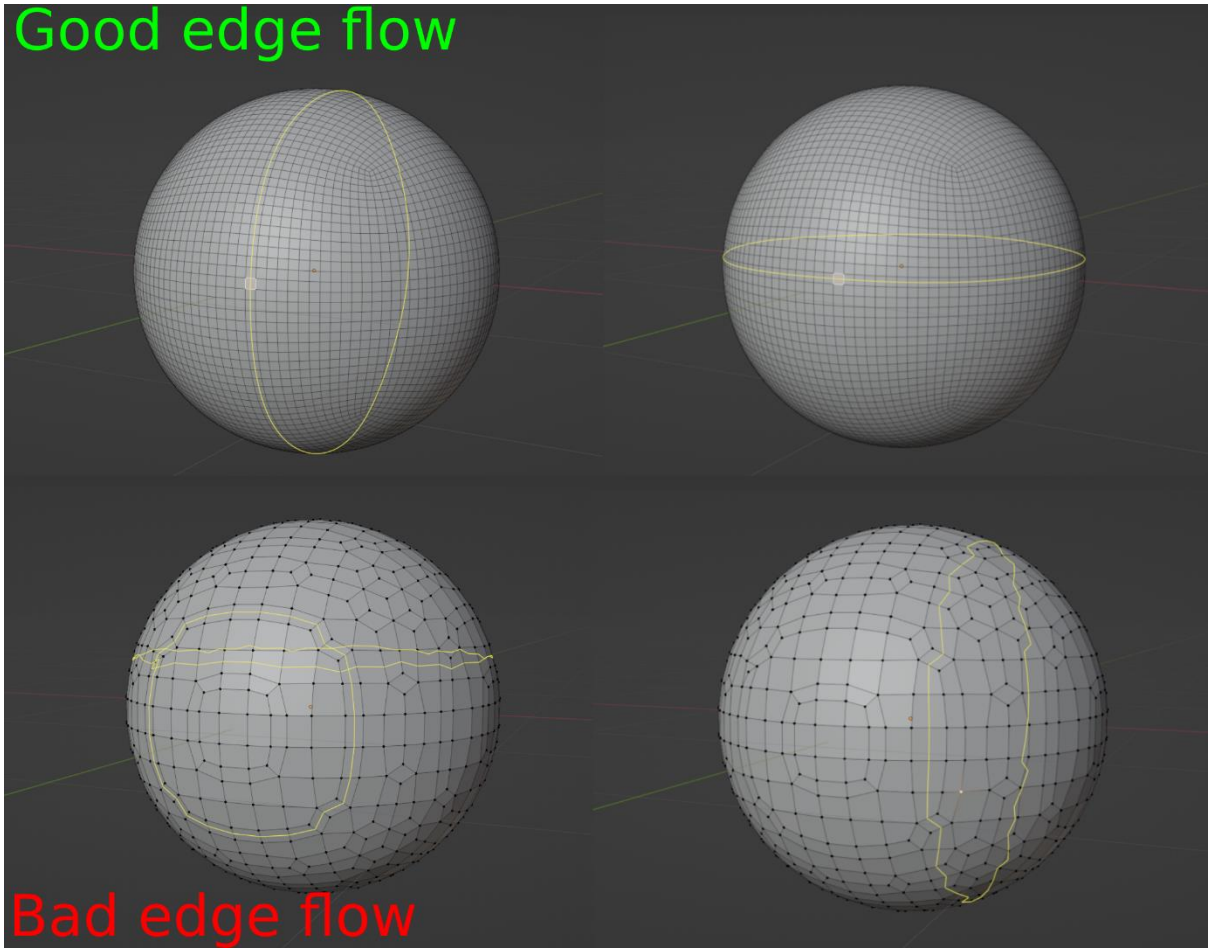


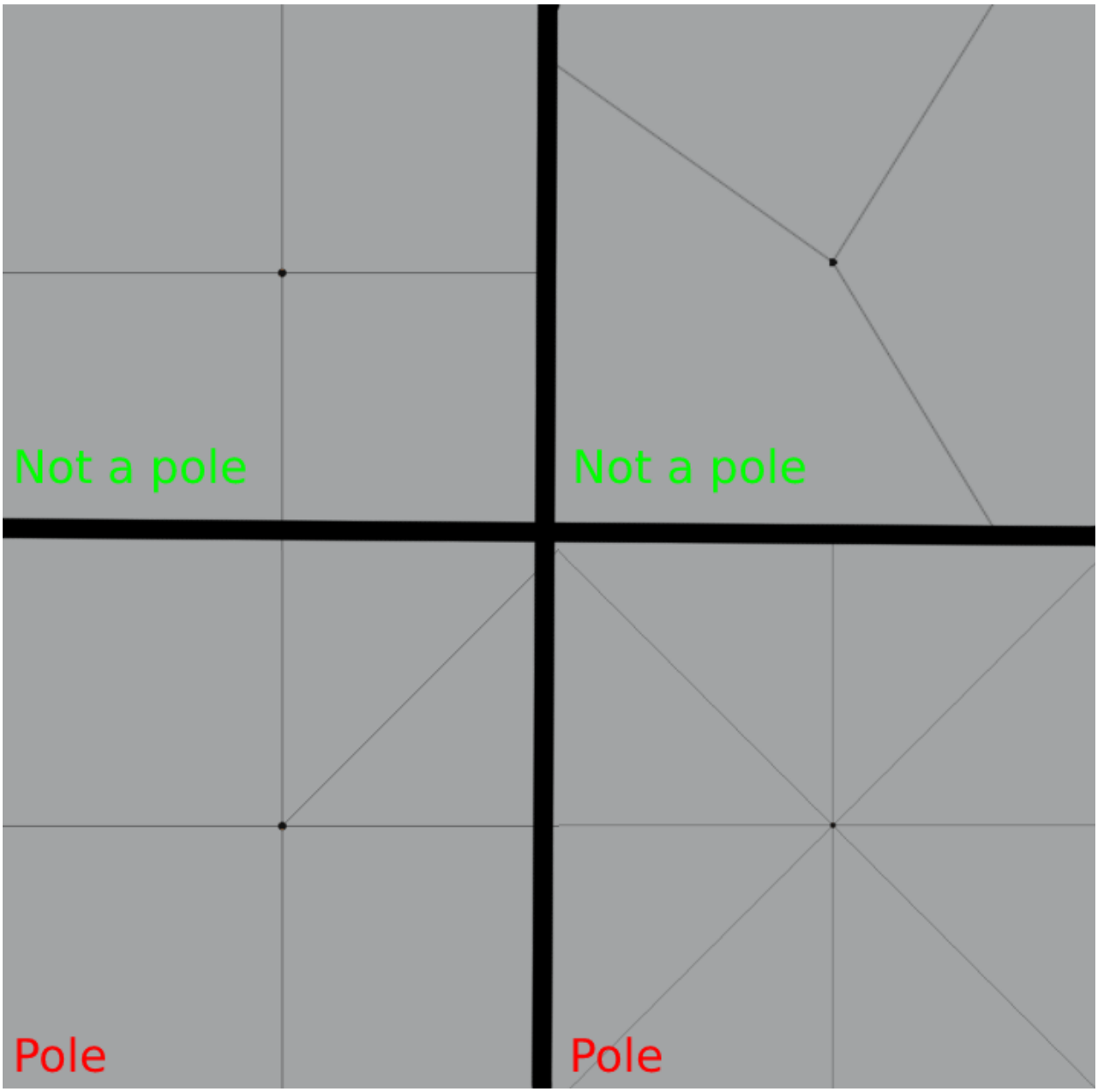


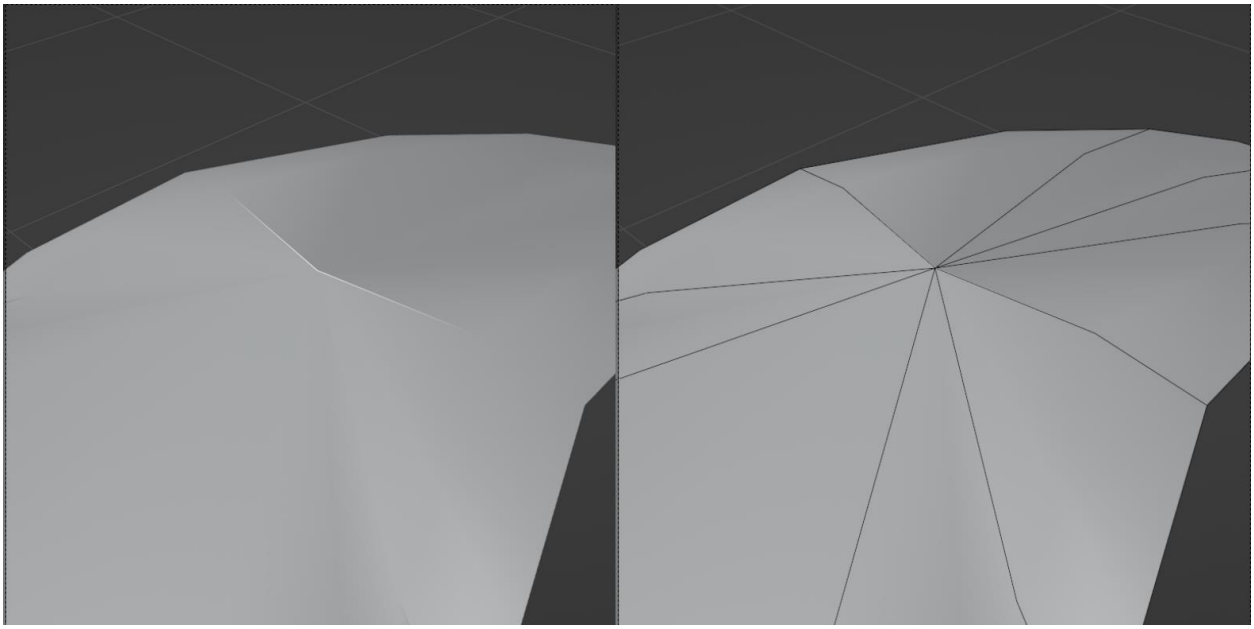
Chapter 9: Optimizing the Base Meshes

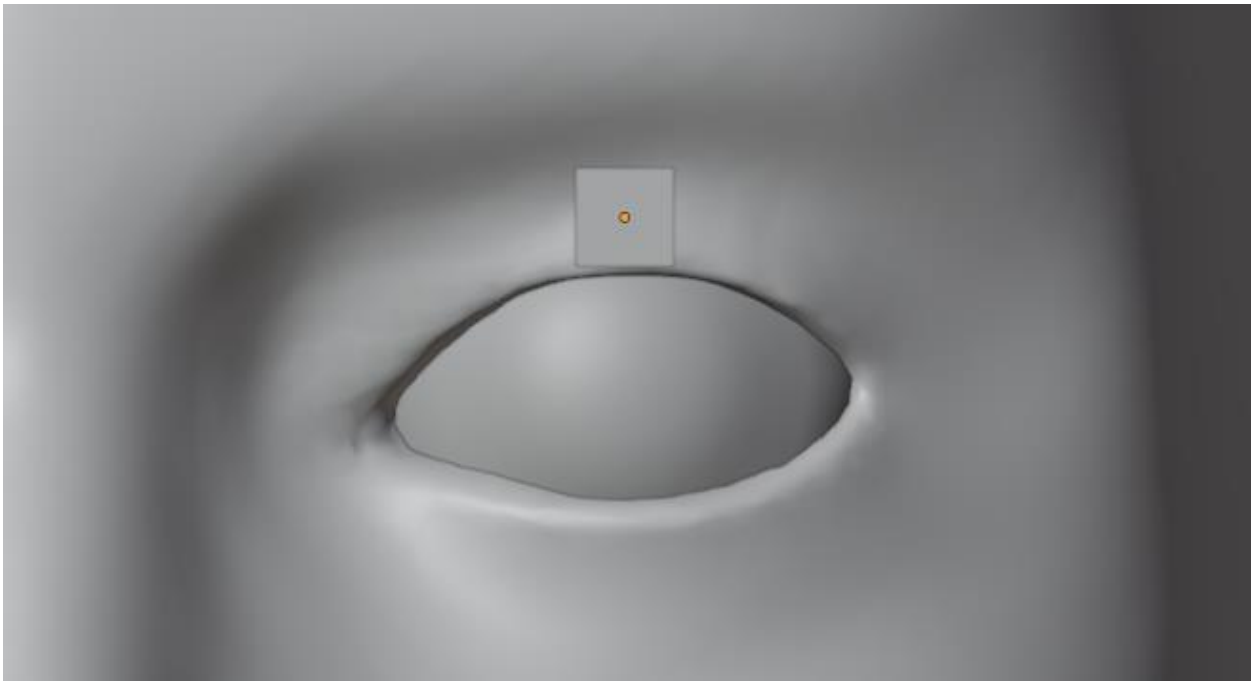


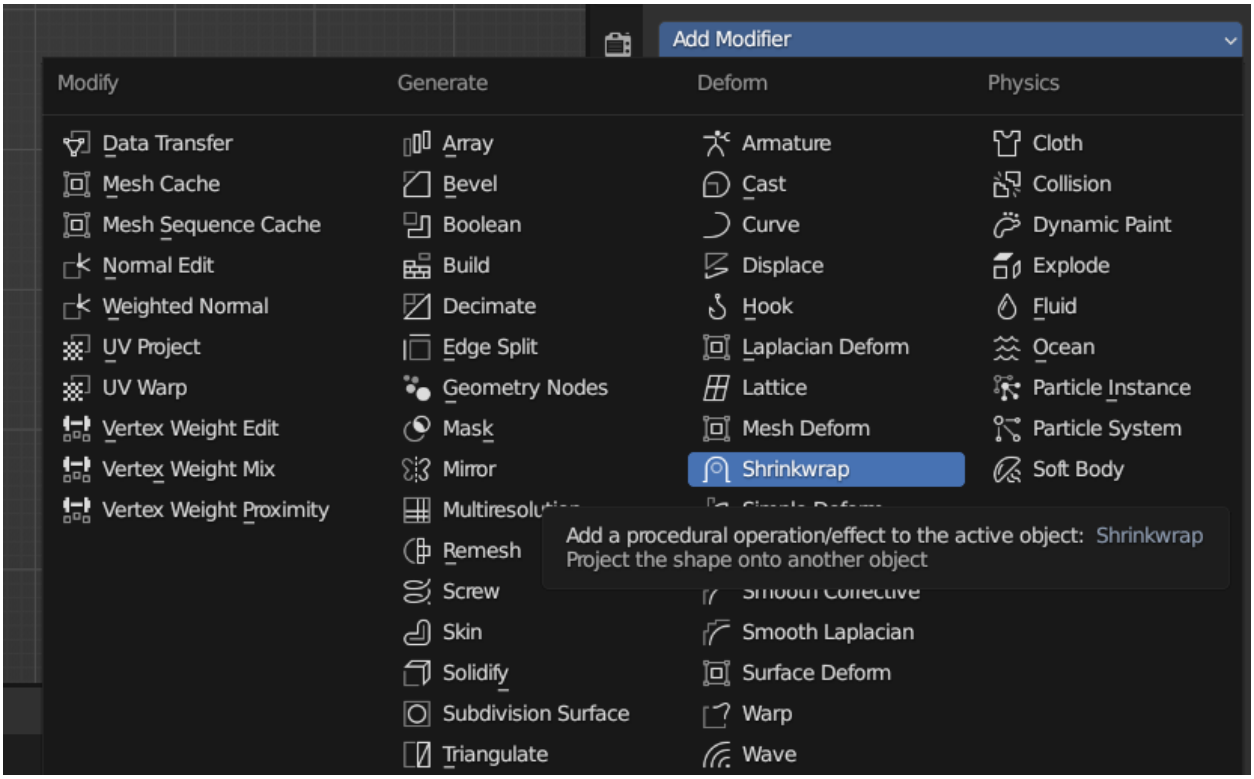


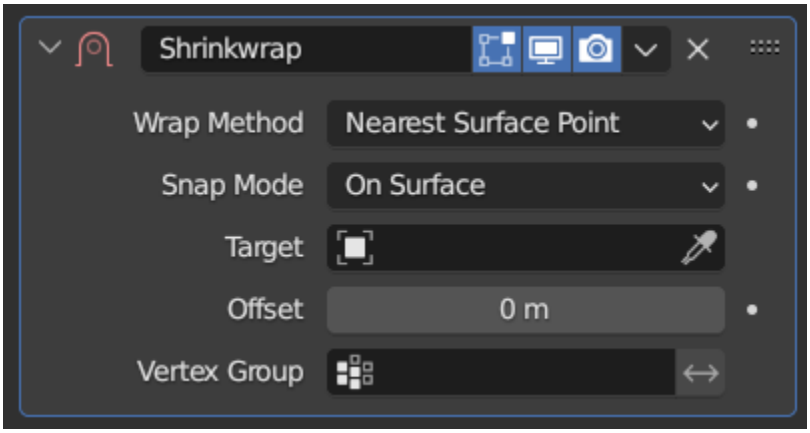

Good edge flow
Bad edge flow

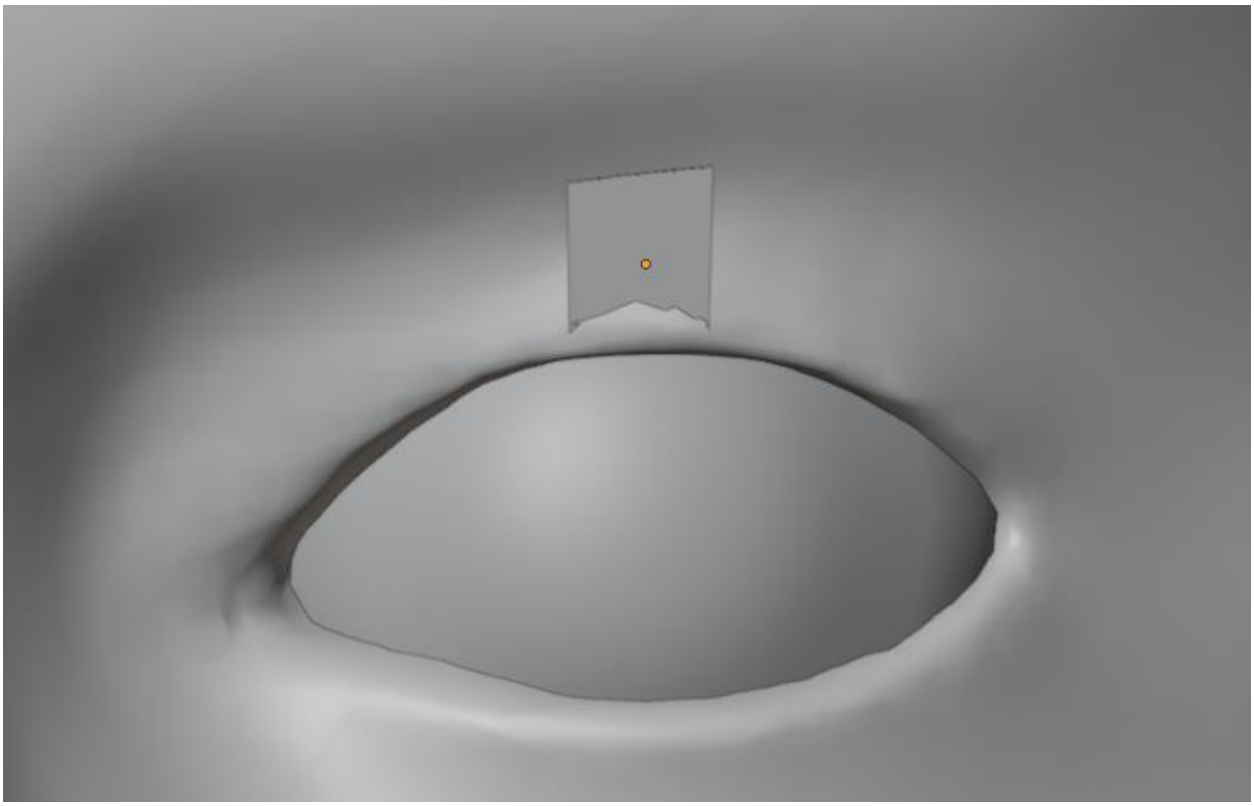

Not a pole
Not a pole
Pole
Pole

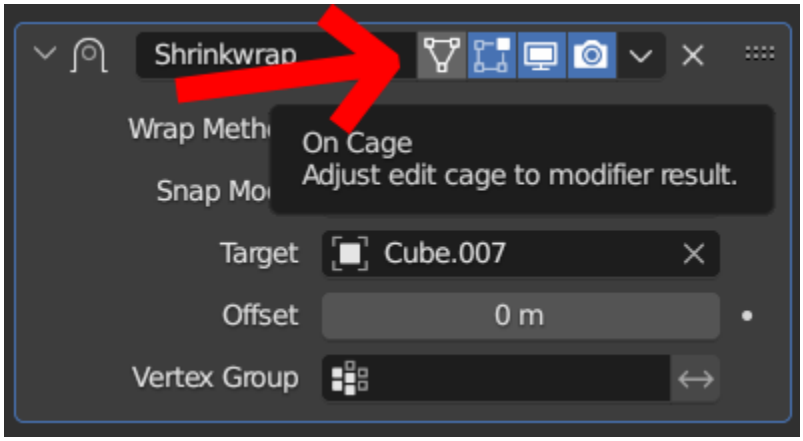


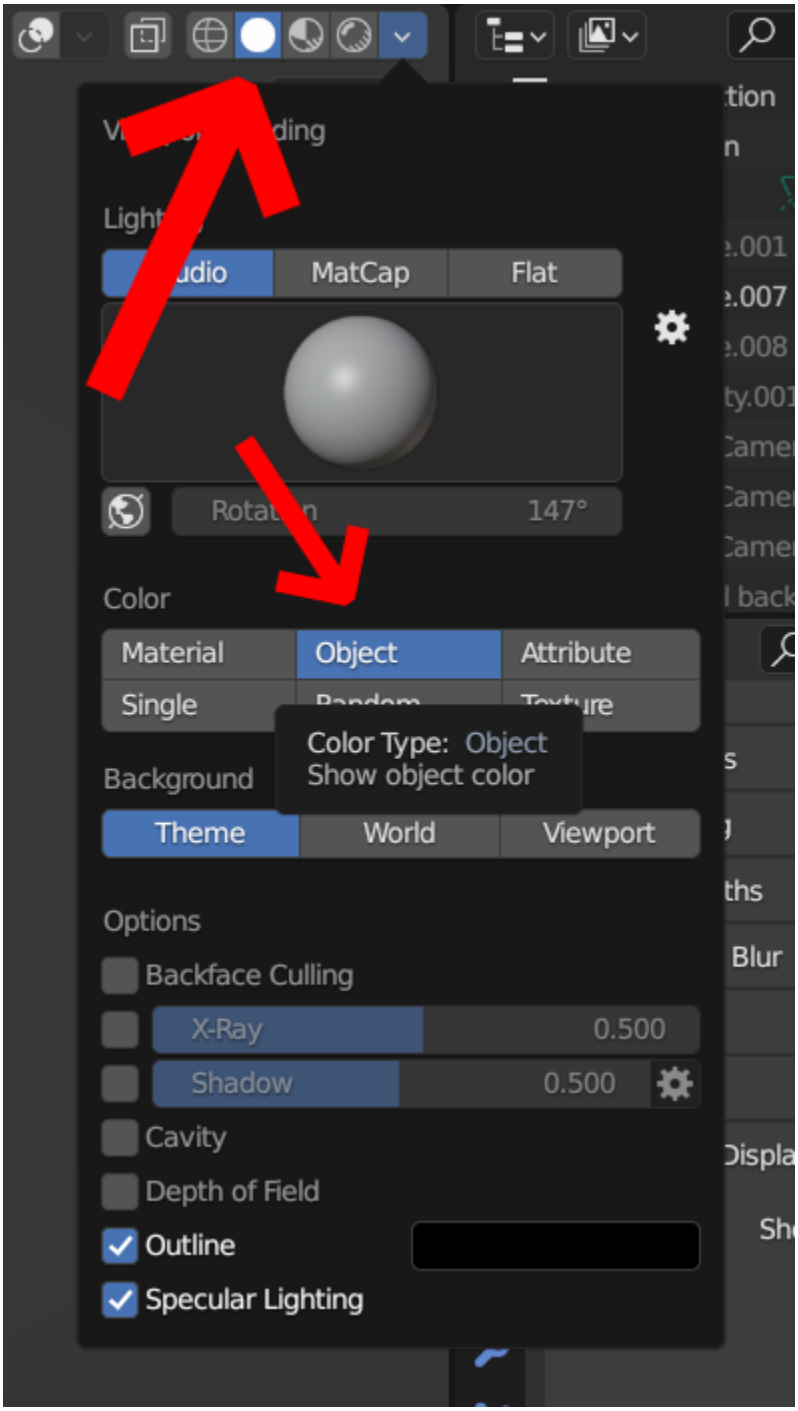


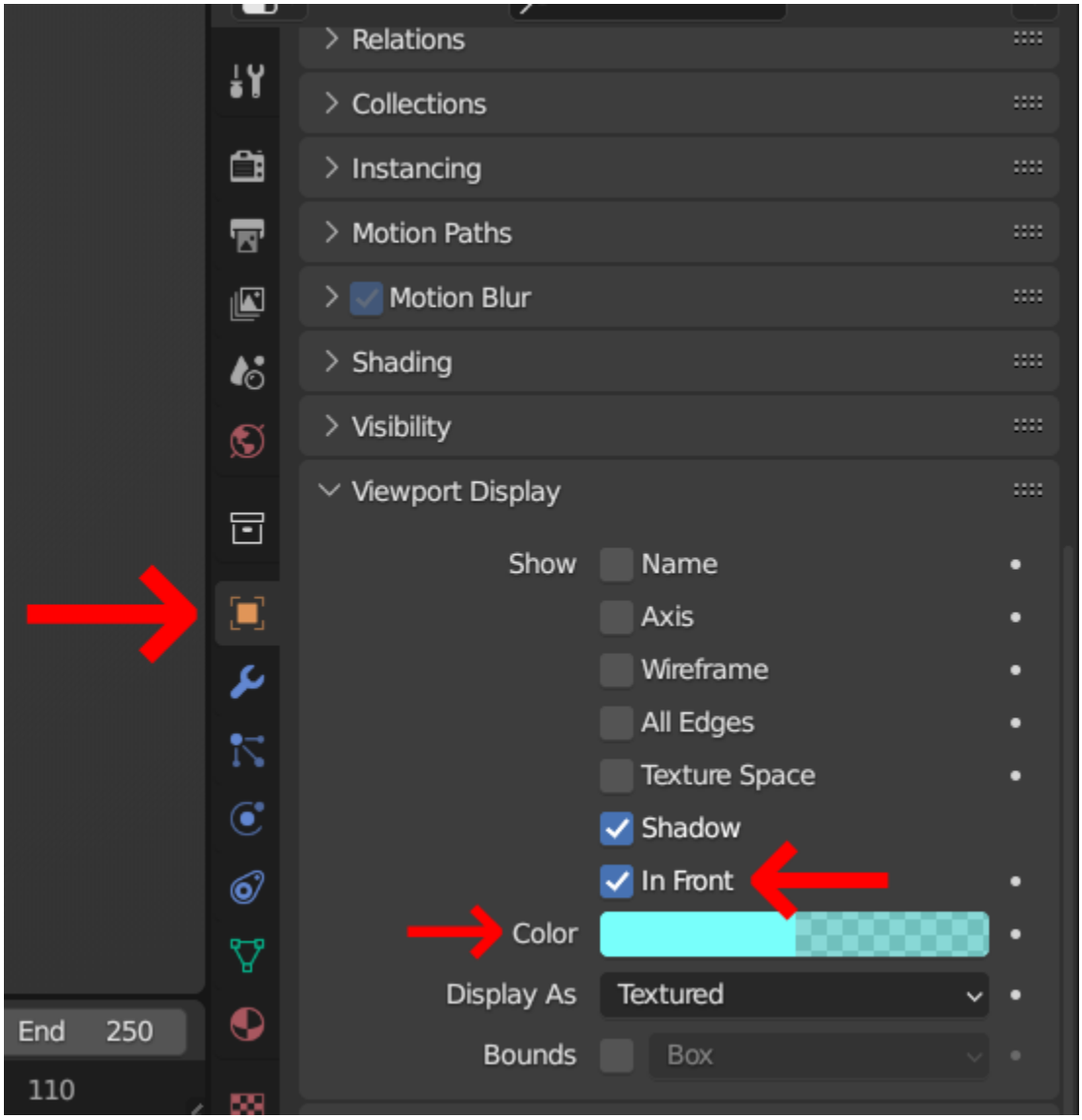

Add Modifier
Modify
Generate
Deform
Physics
Data Transfer
Mesh Cache
Mesh Sequence Cache
Normal Edit
Weighted Normal
UV Project
UV Warp
Vertex Weight Edit
Vertex Weight Mix
Vertex Weight Proximity
Array
Bevel
Boolean
Build
Decimate
Edge Split
Geometry Nodes
Mask
Mirror
Remesh
Screw
Skin
Solidify
Subdivision Surface
Triangulate
Armature
Cast
Curve
Displace
Hook
Laplacian Deform
Lattice
Mesh Deform
Shrinkwrap
Smooth Laplacian
Surface Deform
Warp
Wave
Cloth
Collision
Dynamic Paint
Explode
Fluid
Ocean
Particle Instance
Particle System
Soft Body
Add a procedural operation/effect to the active object: Shrinkwrap
Project the shape onto another object

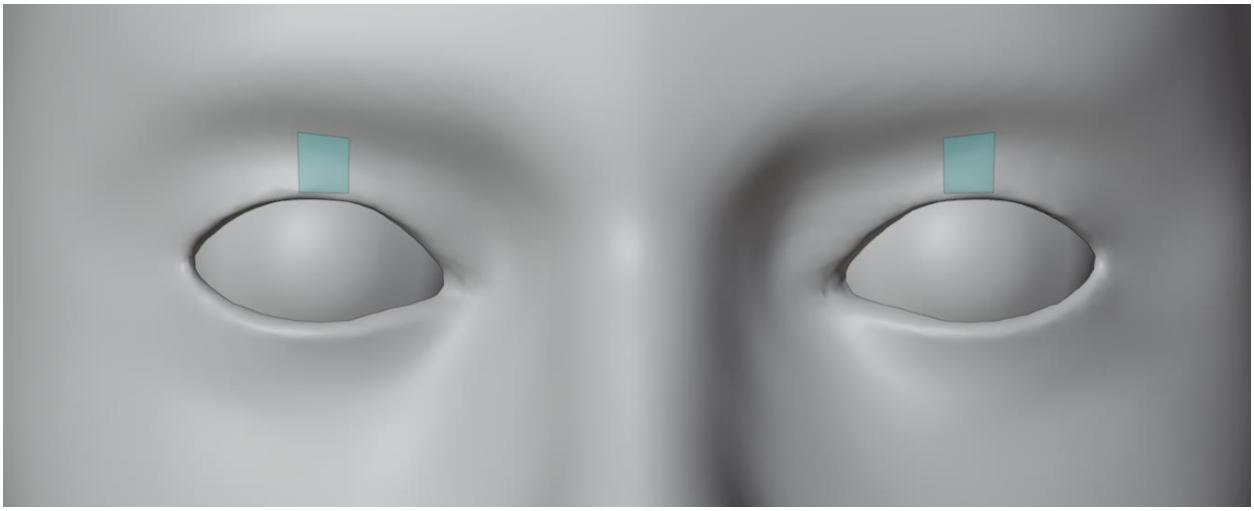

Shrinkwrap
Wrap Method
Nearest Surface Point
Snap Mode
On Surface
Target
Offset
0 m
Vertex Group

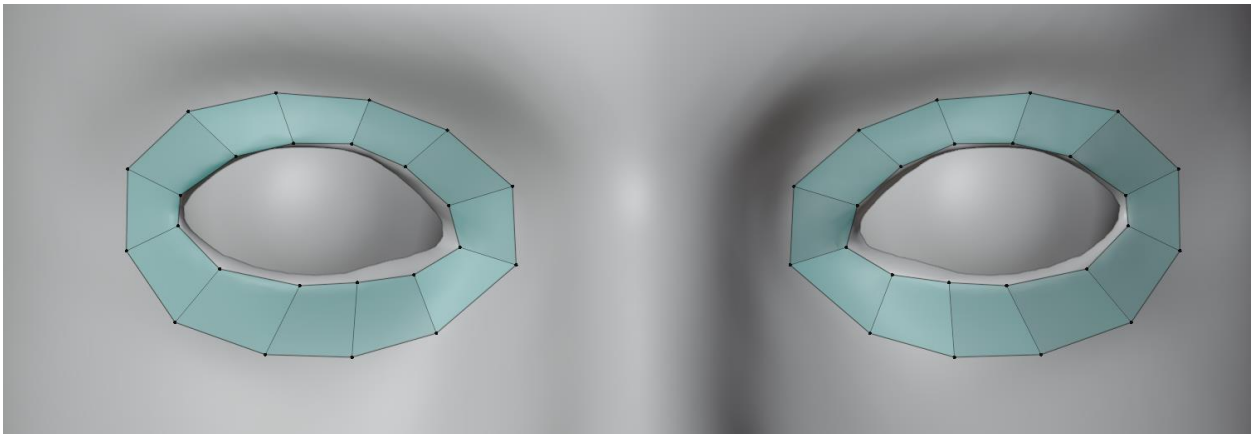


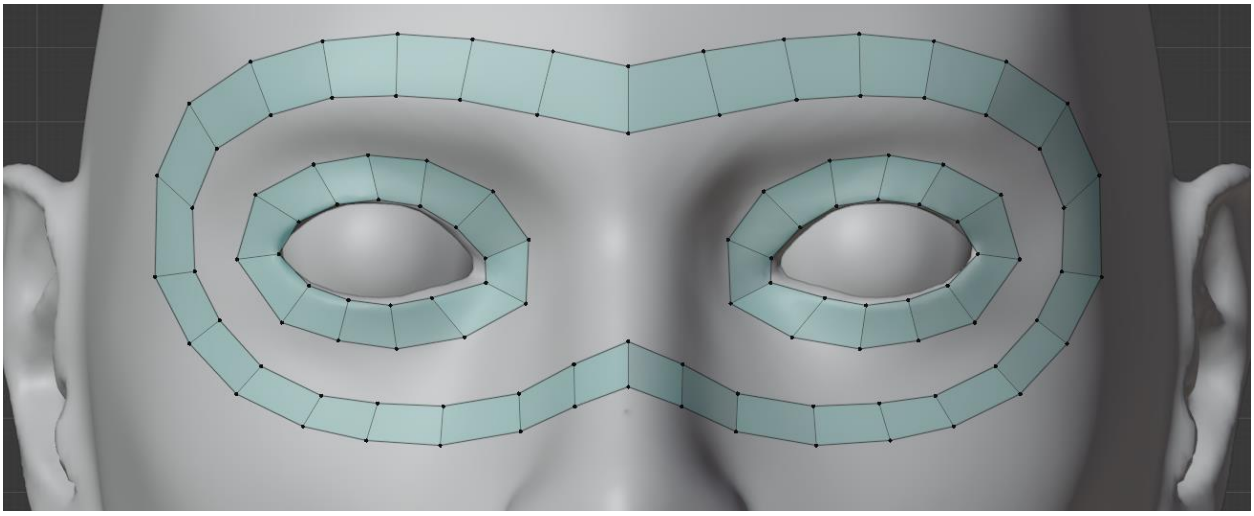

Shrinkwrap
Wrap Meth
On Cage
Adjust edit cage to modifier result.
Snap Mo
Target
Cube.007
Offset
0 m
Vertex Group

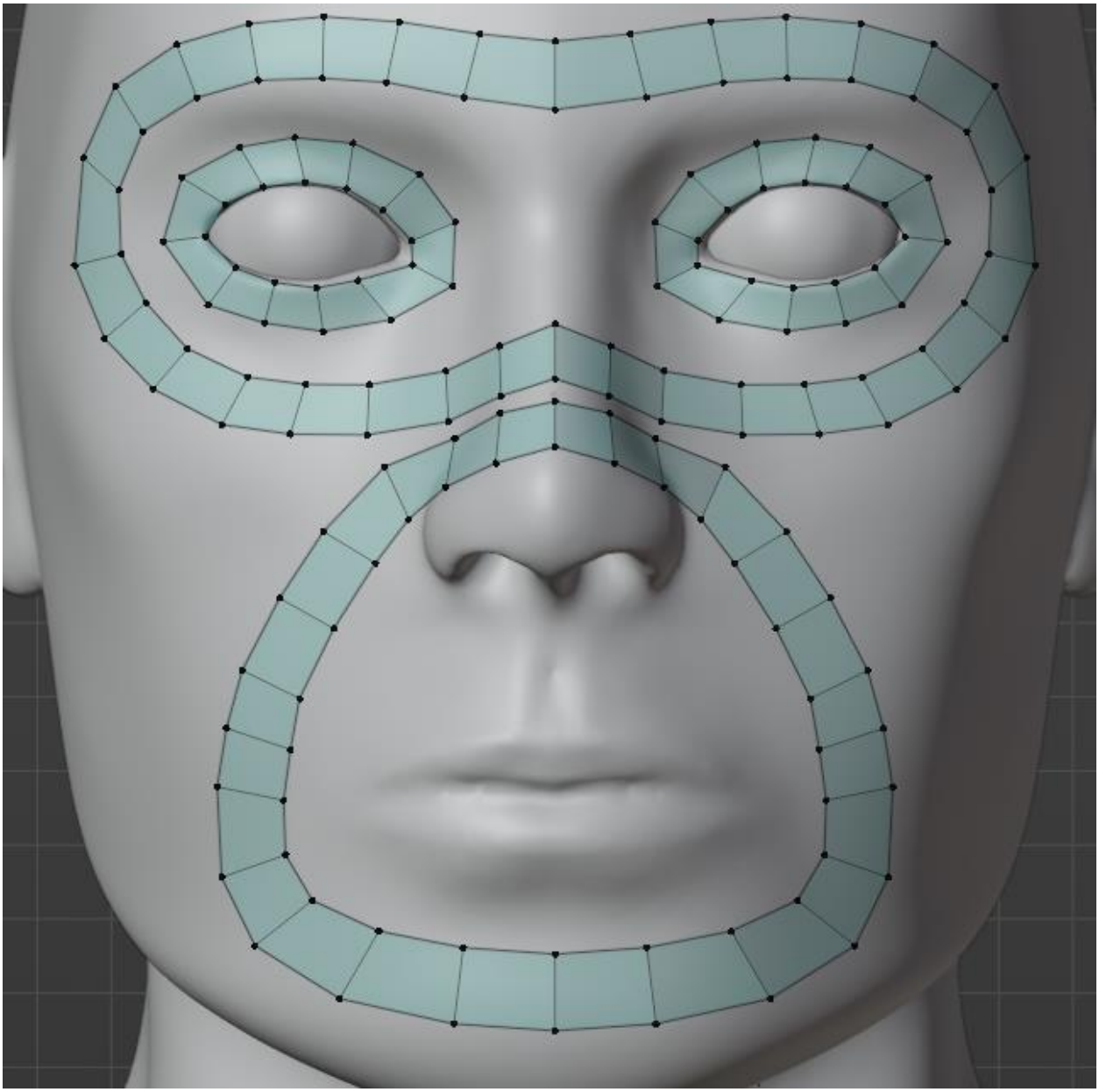

MatCap
Flat
147°
Color
Material
Object
Attribute
Single
Color Type: Object
Show object color
Background
Theme
World
Viewport
Options
Backface Culling
X-Ray
0.500
Shadow
0.500
Cavity
Depth of Field
Outline
Specular Lighting

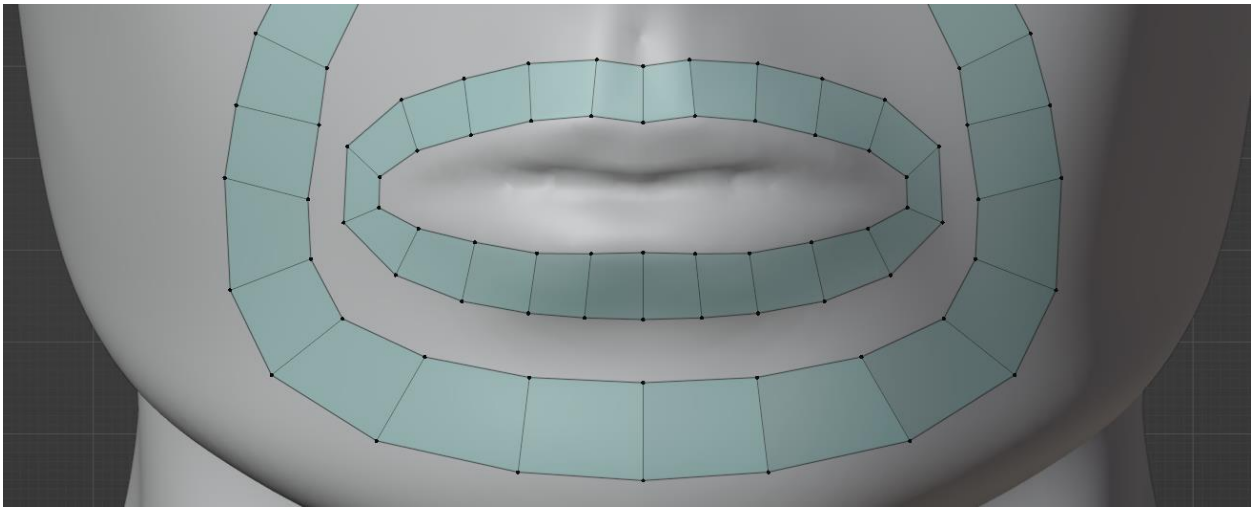

Relations
Collections
Instancing
Motion Paths
Motion Blur
Shading
Visibility
Viewport Display
Show
Name
Axis
Wireframe
All Edges
Texture Space
Shadow
In Front
Color
Display As
Textured
Bounds
Box
End 250
110

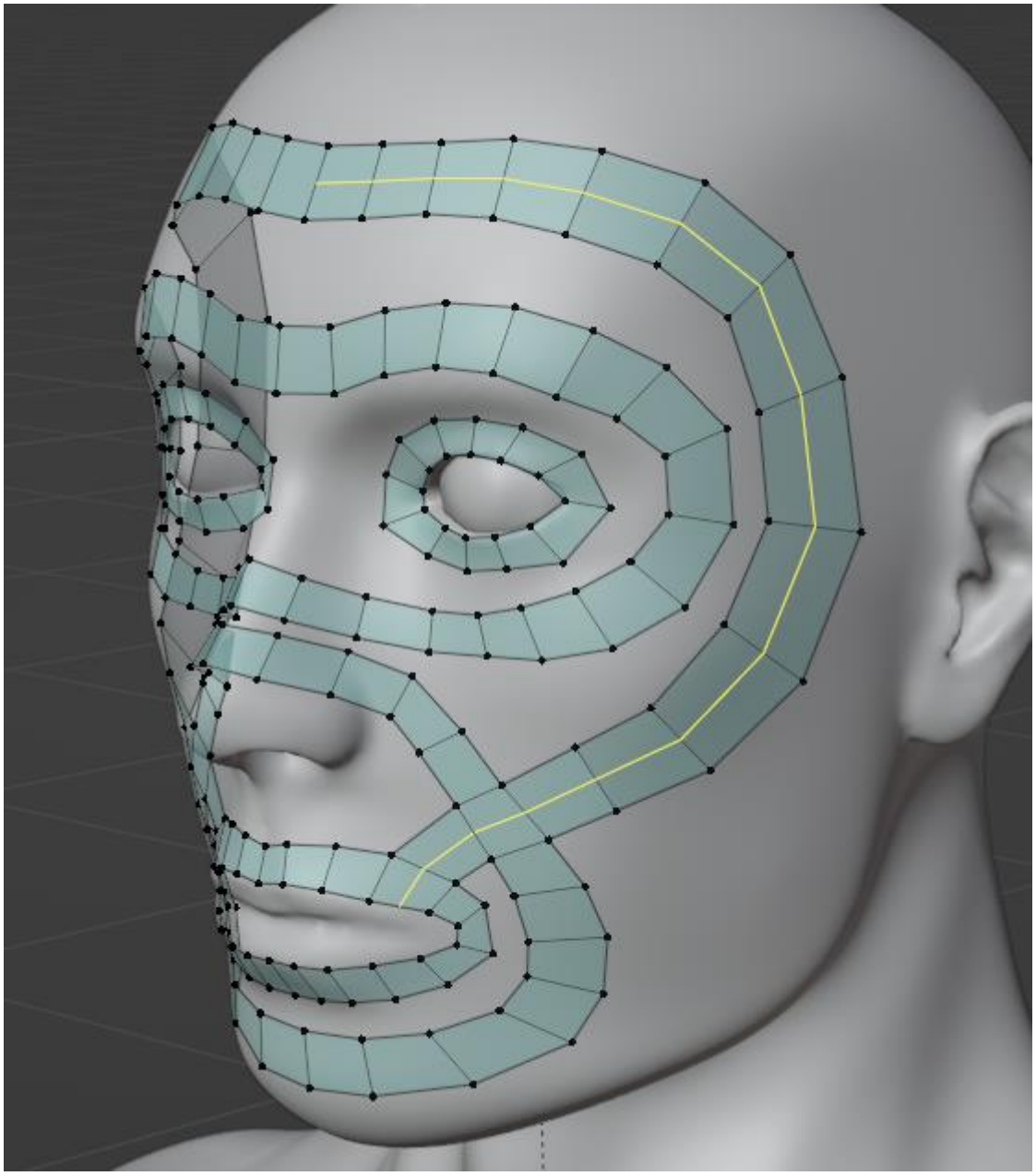


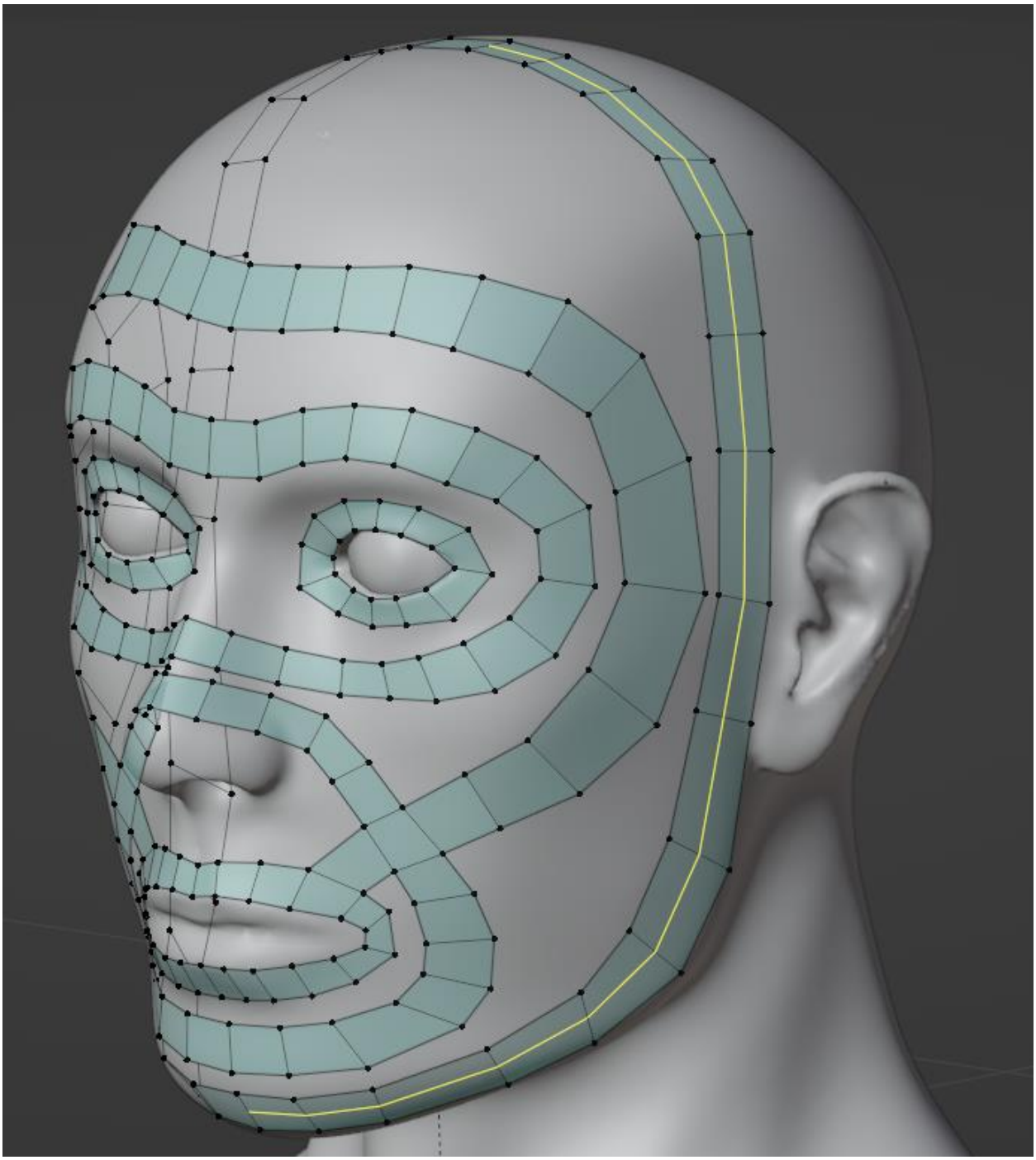


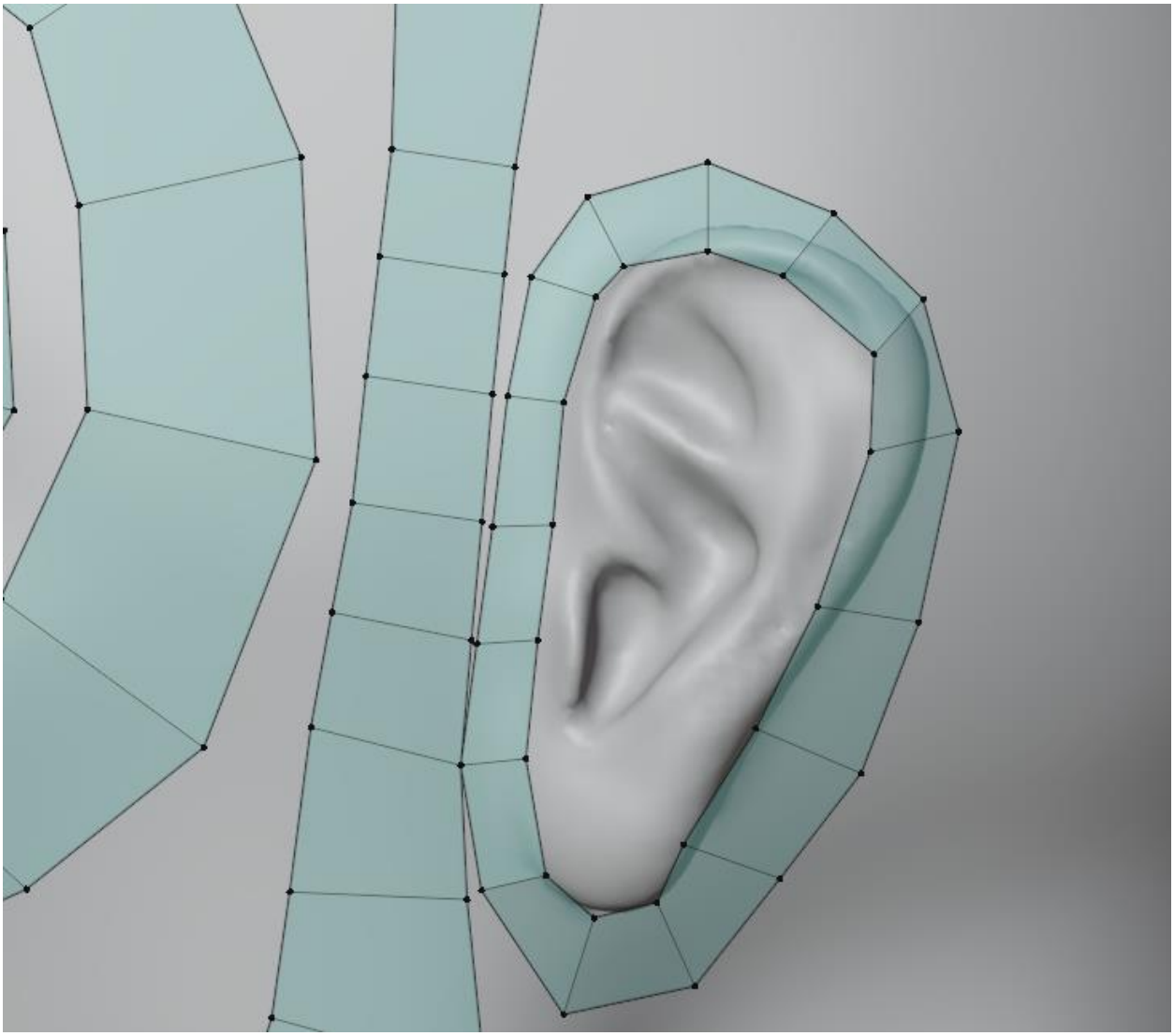


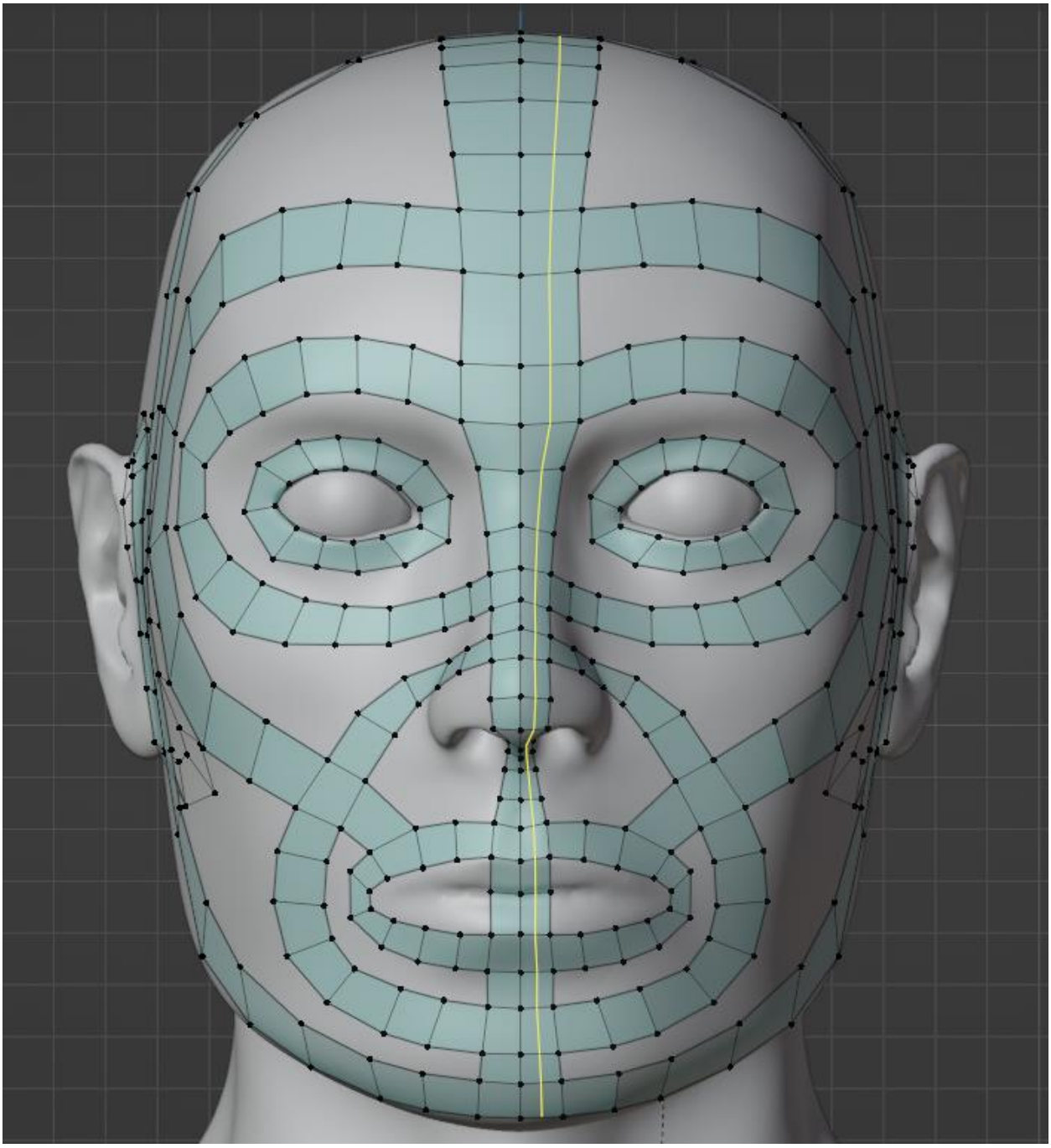


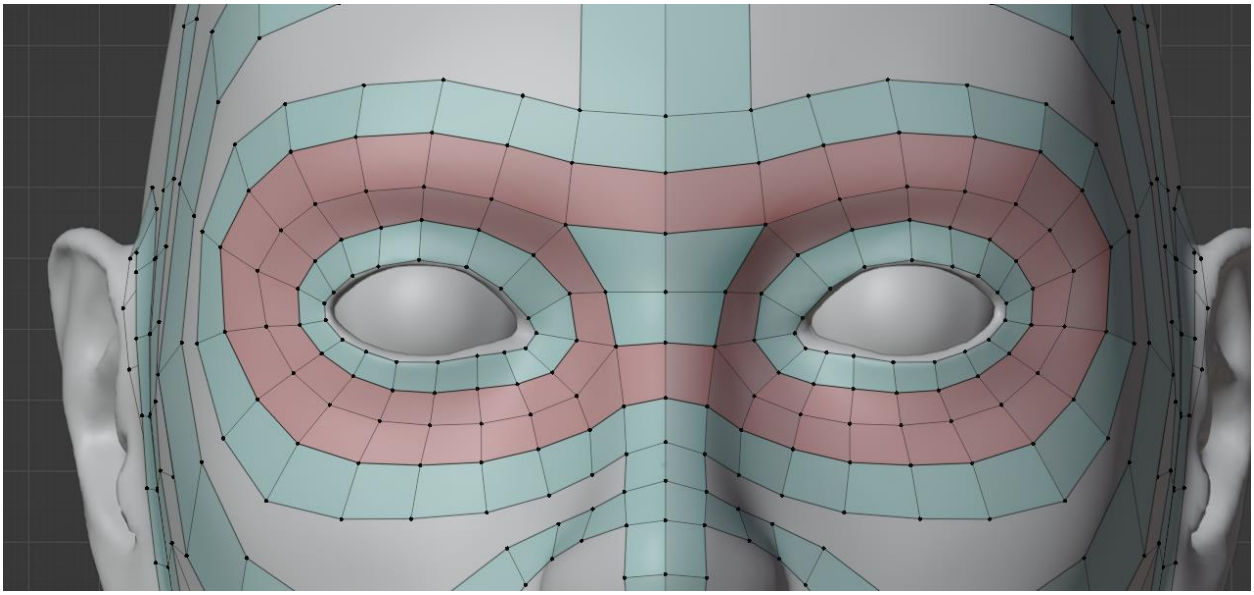


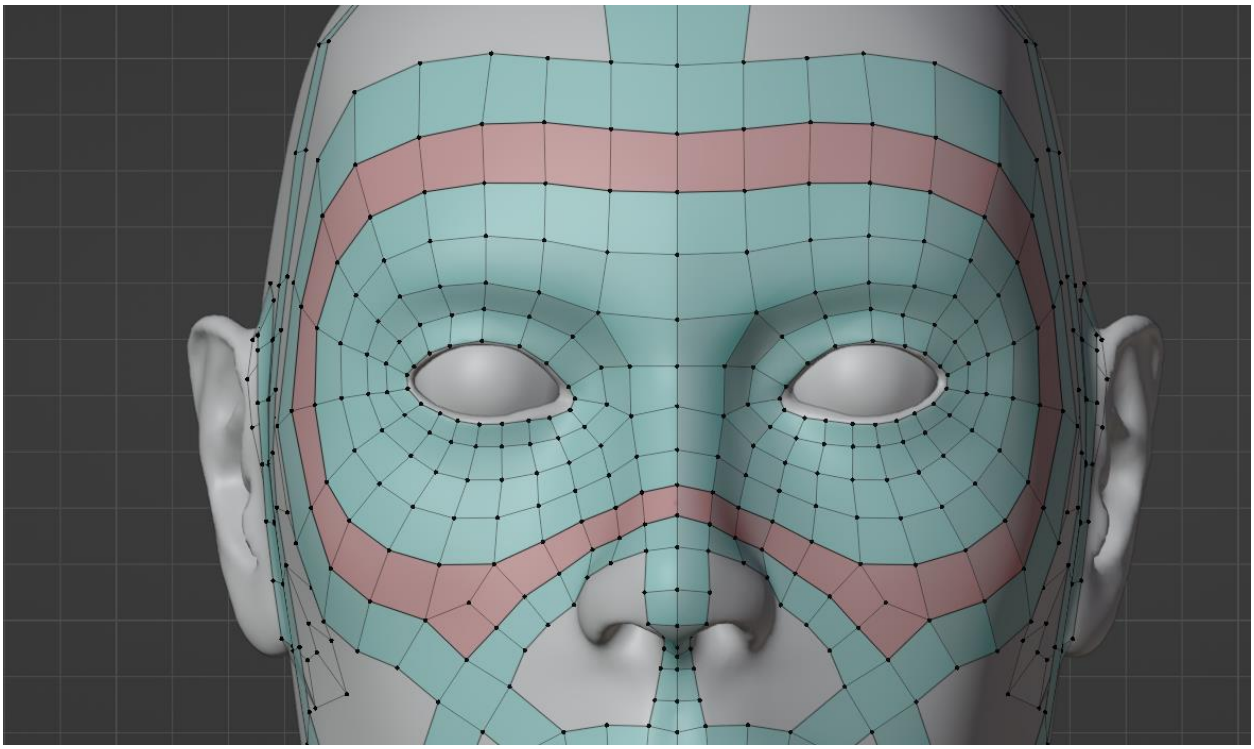


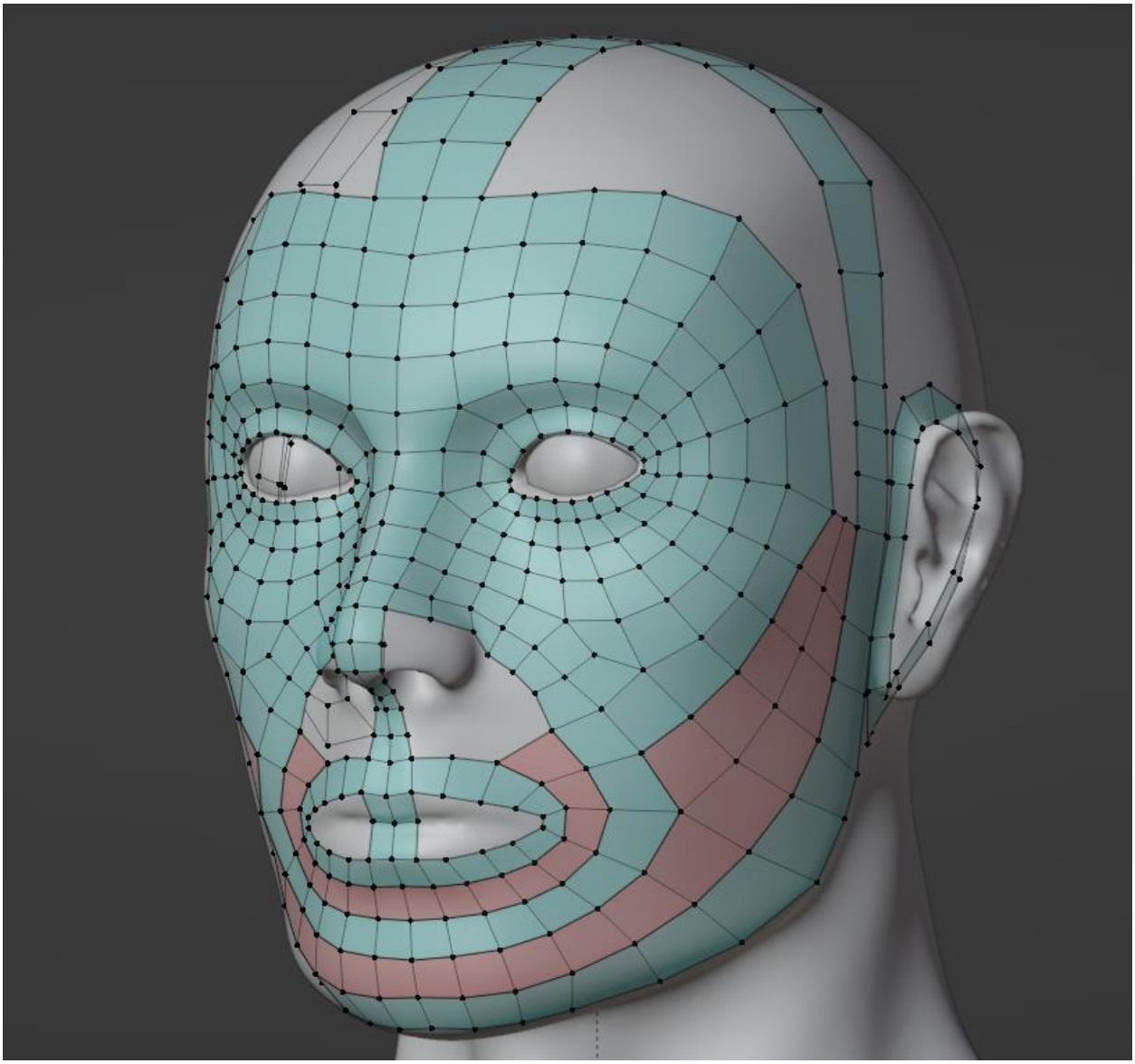


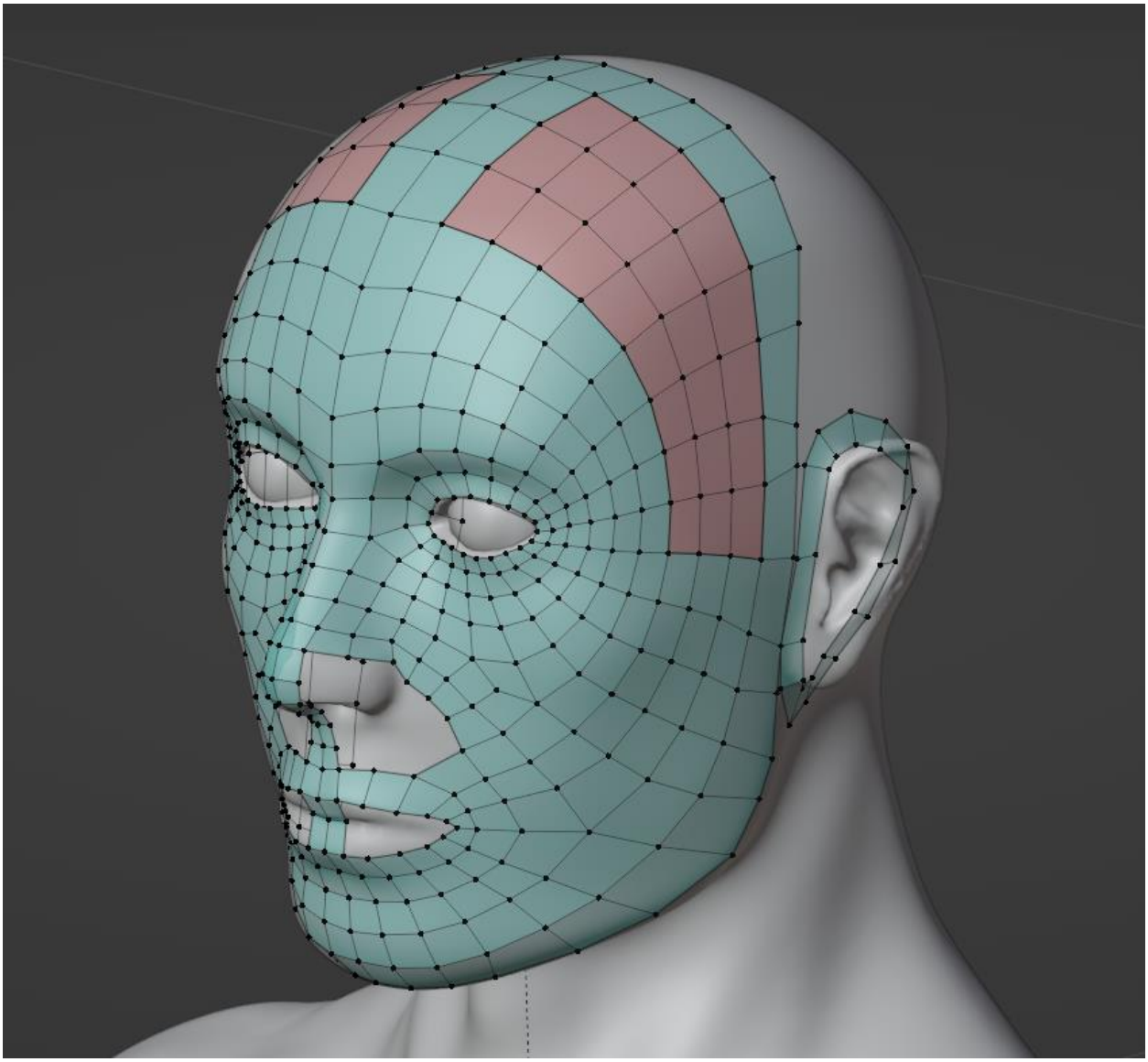


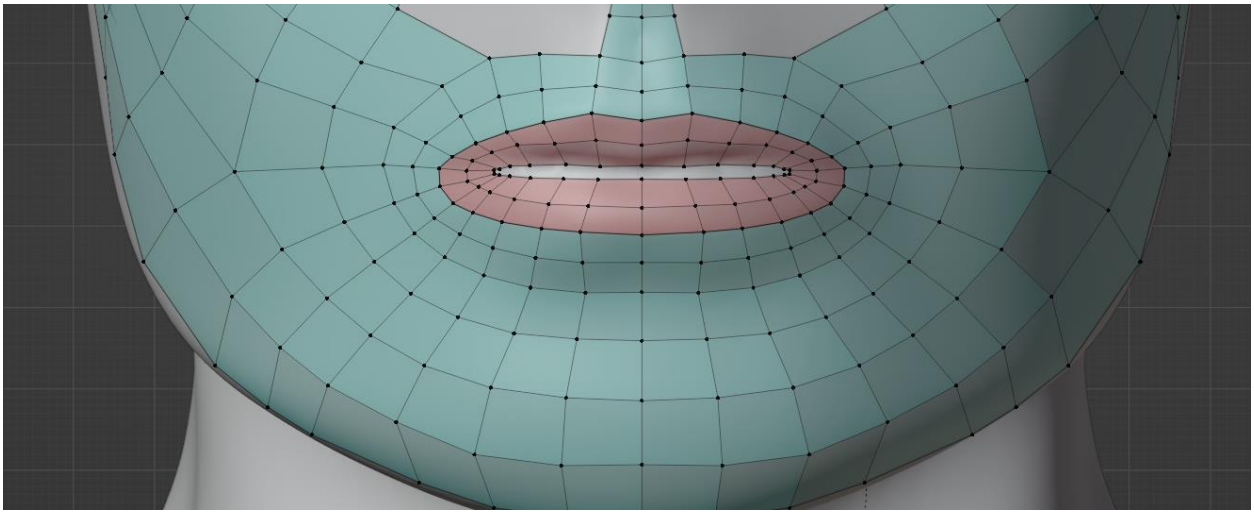


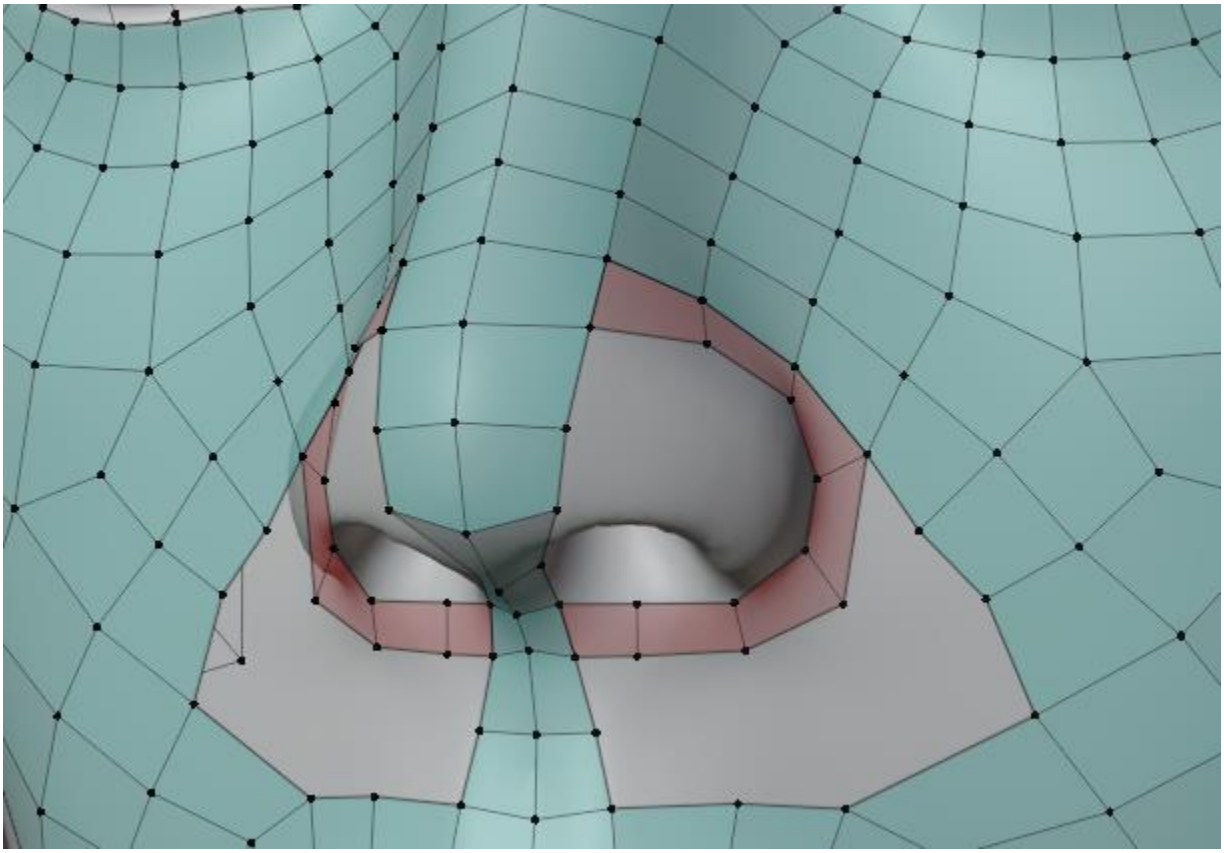


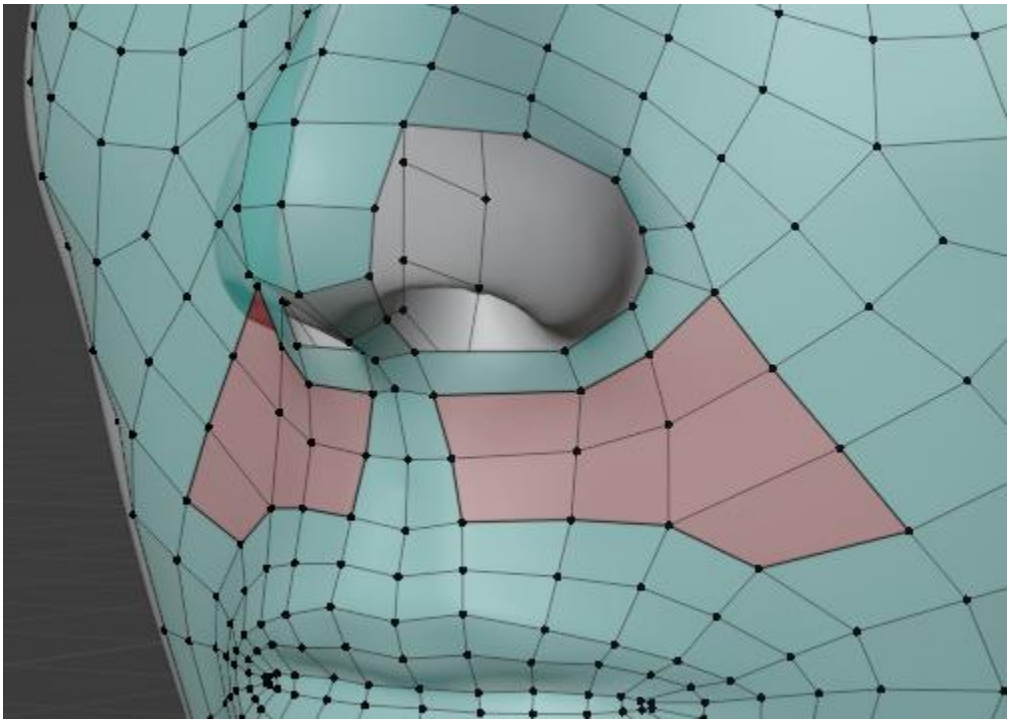


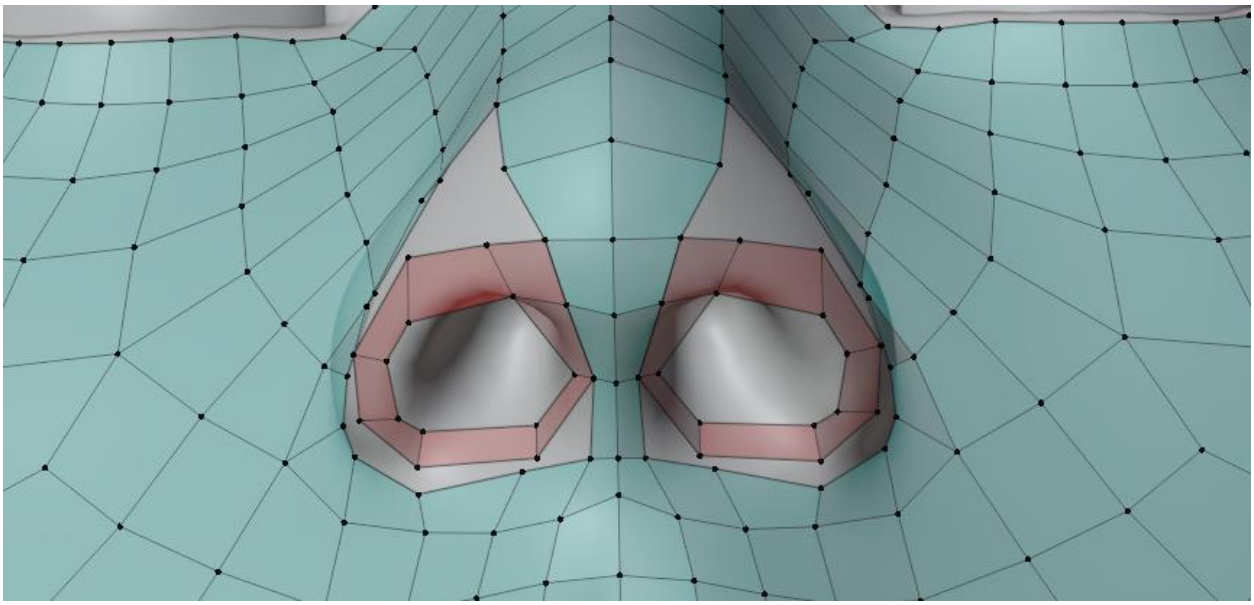


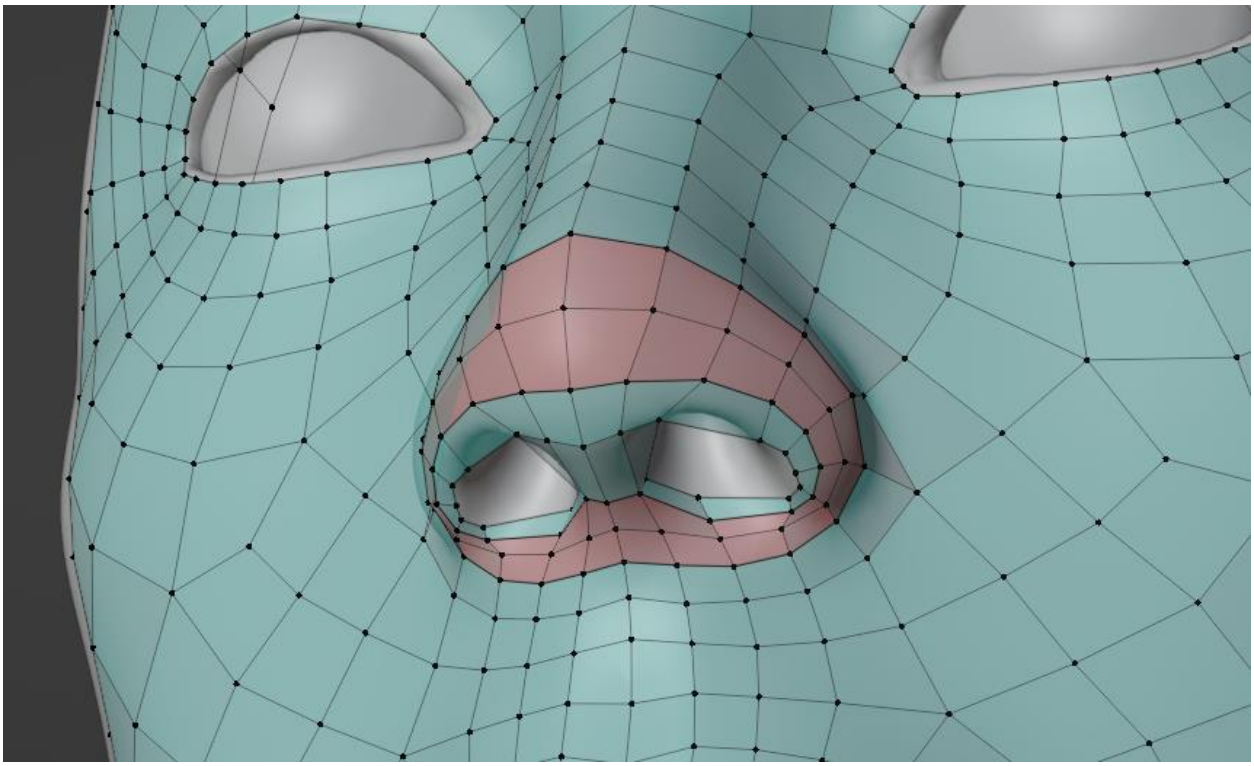


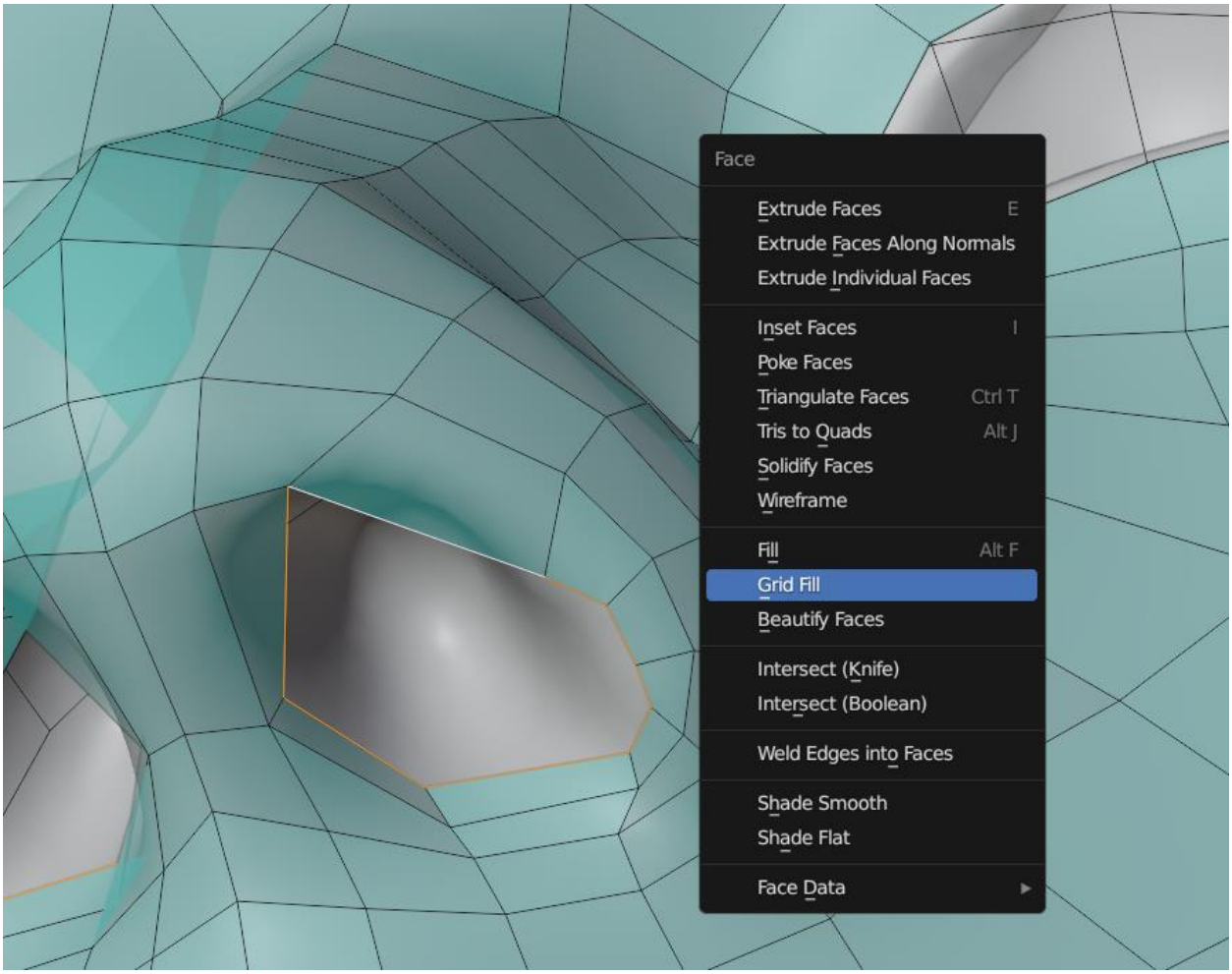


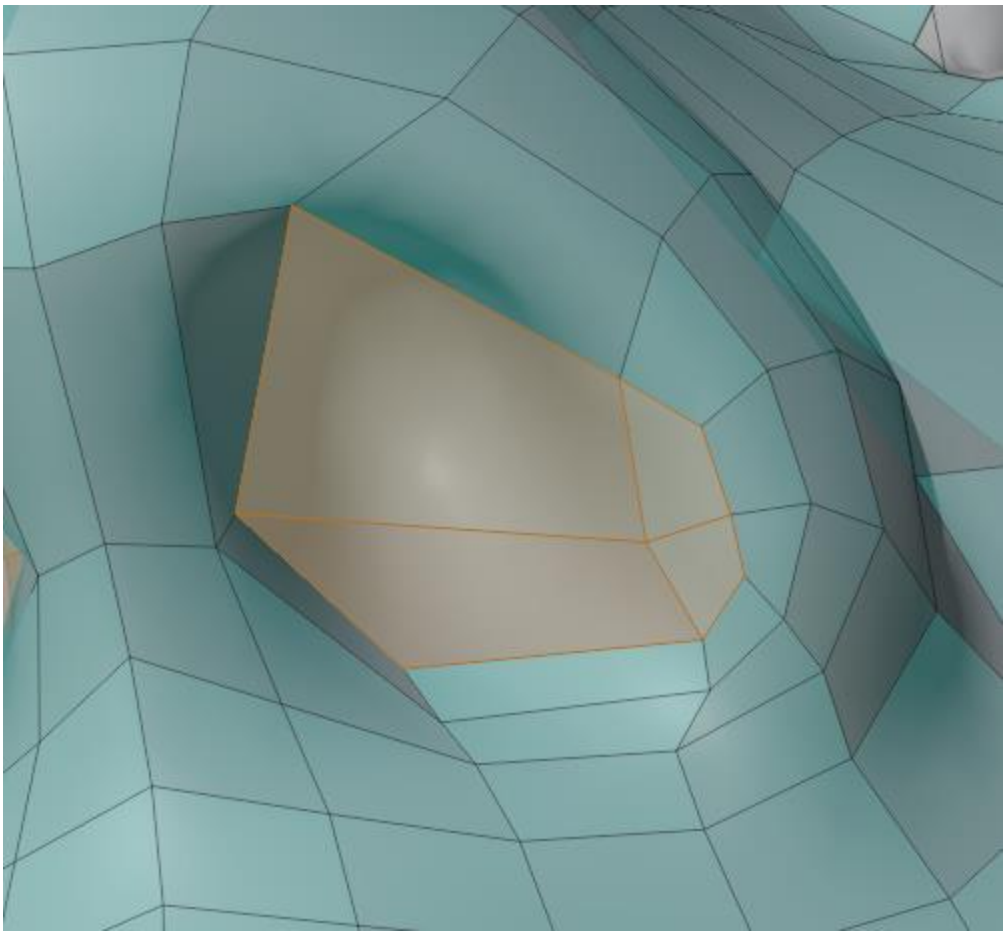


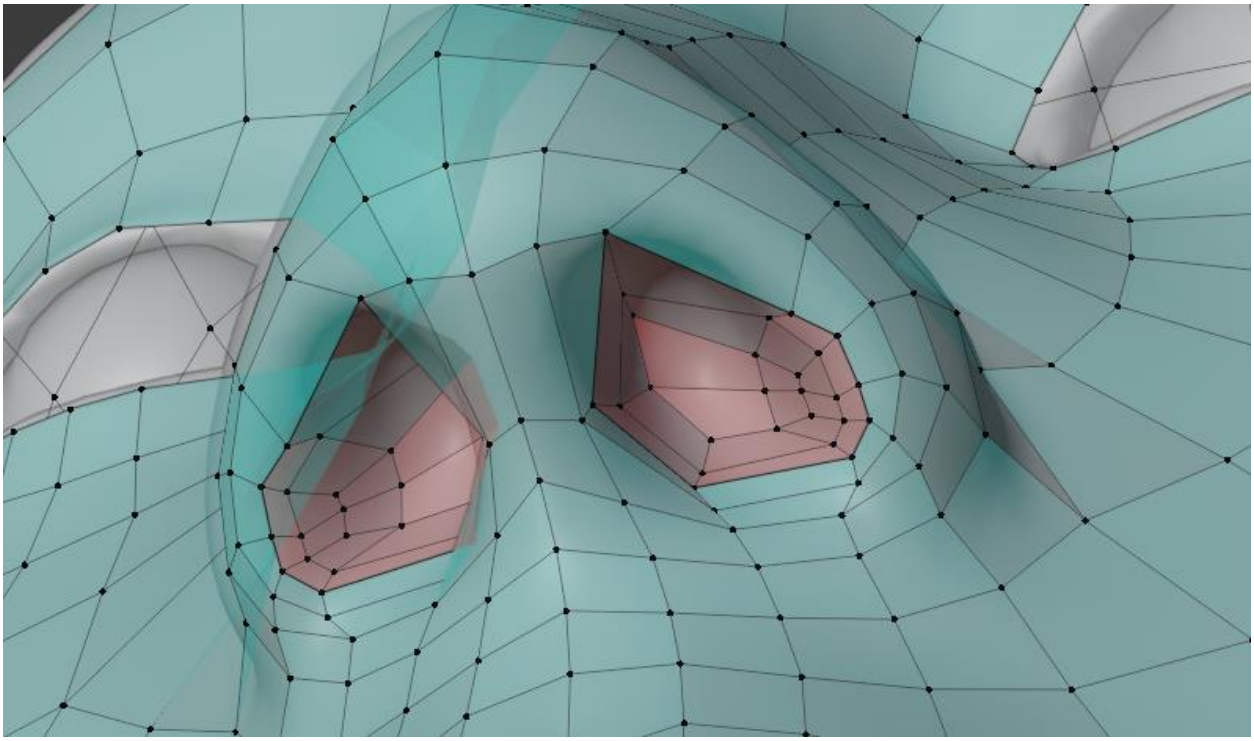


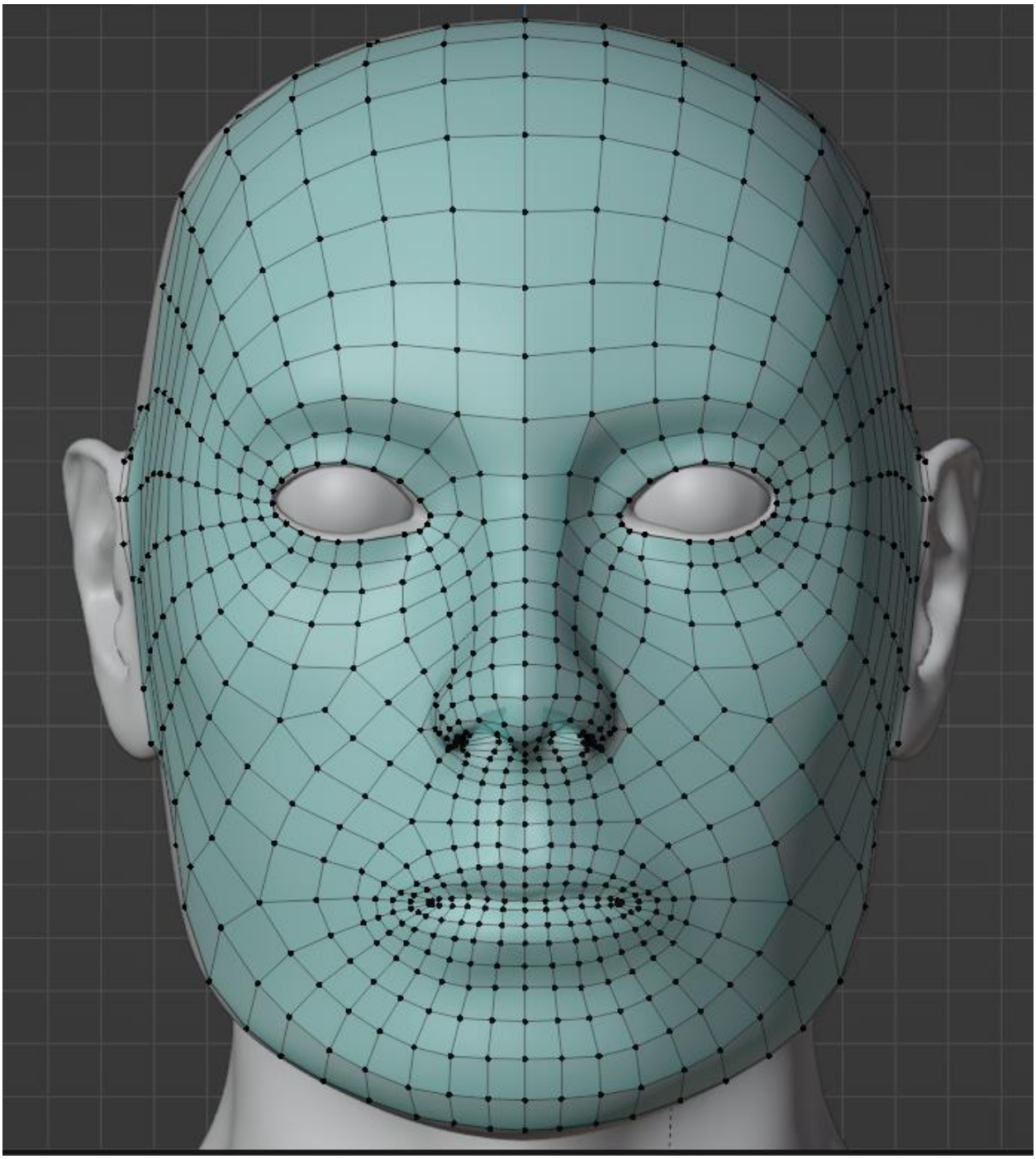


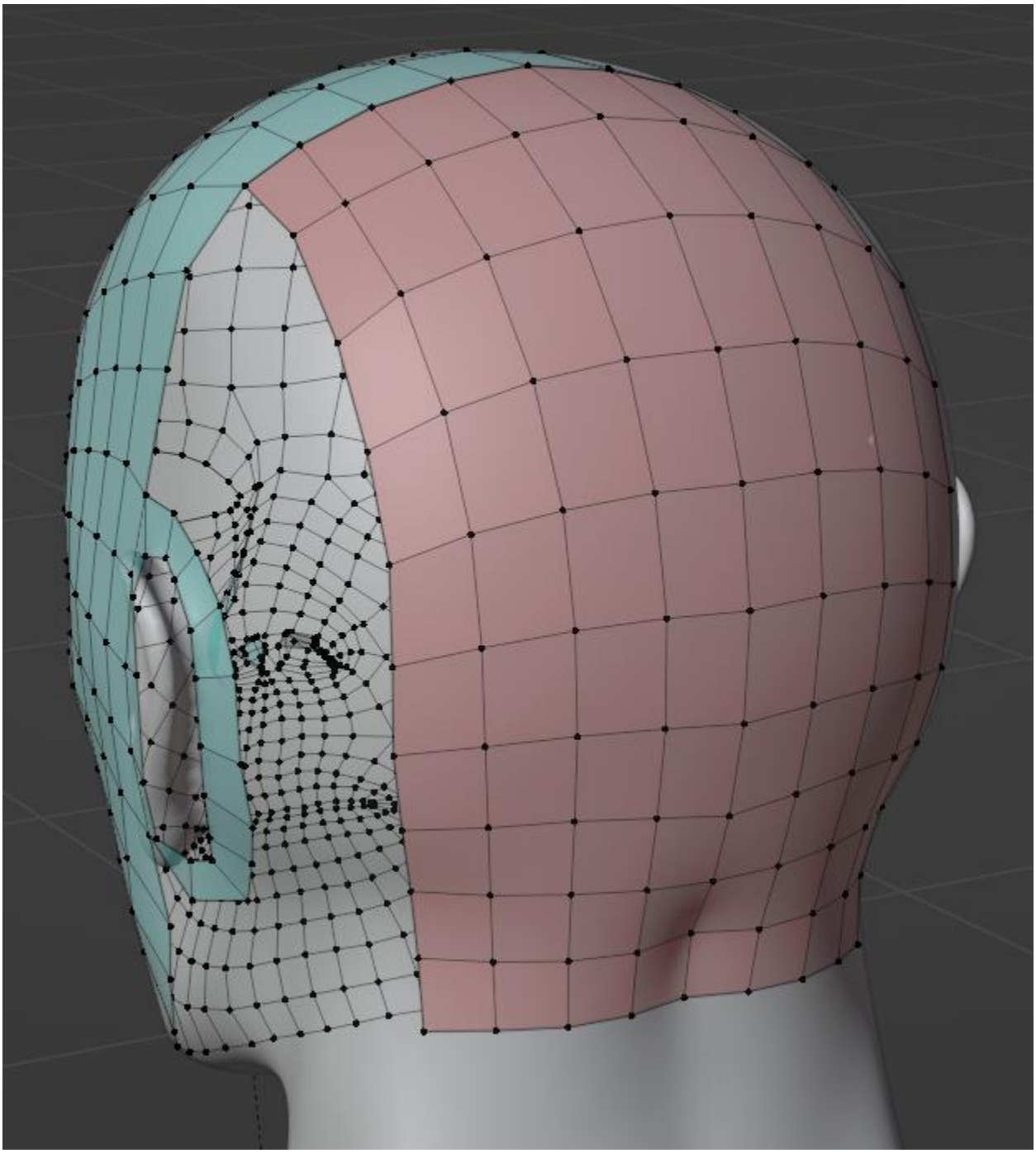


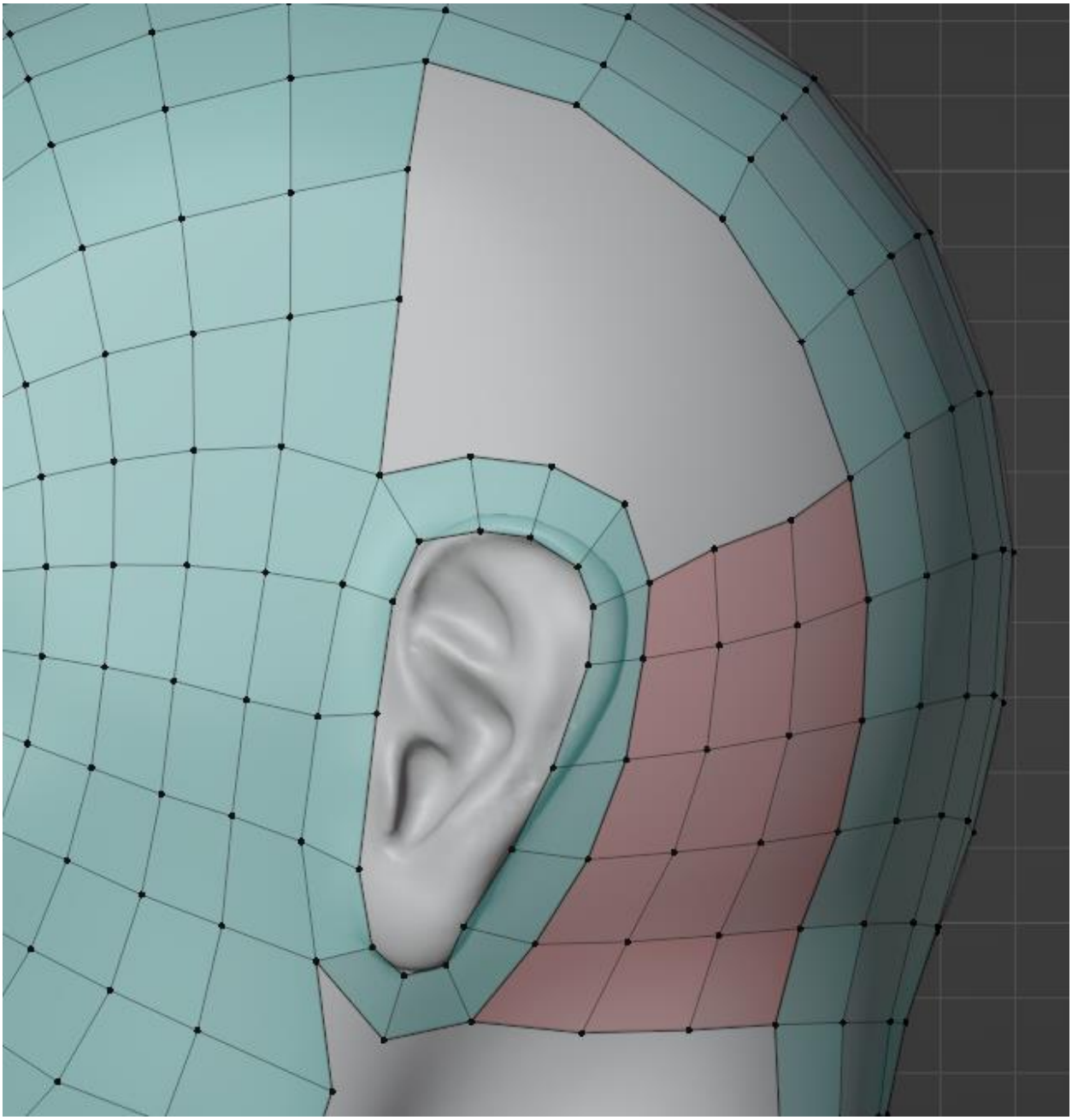

Face
Extrude Faces E
Extrude Faces Along Normals
Extrude Individual Faces
Inset Faces I
Poke Faces
Triangulate Faces Ctrl T
Tris to Quads Alt J
Solidify Faces
Wireframe
Fill Alt F
Grid Fill
Beautify Faces
Intersect (Knife)
Intersect (Boolean)
Weld Edges into Faces
Shade Smooth
Shade Flat
Face Data

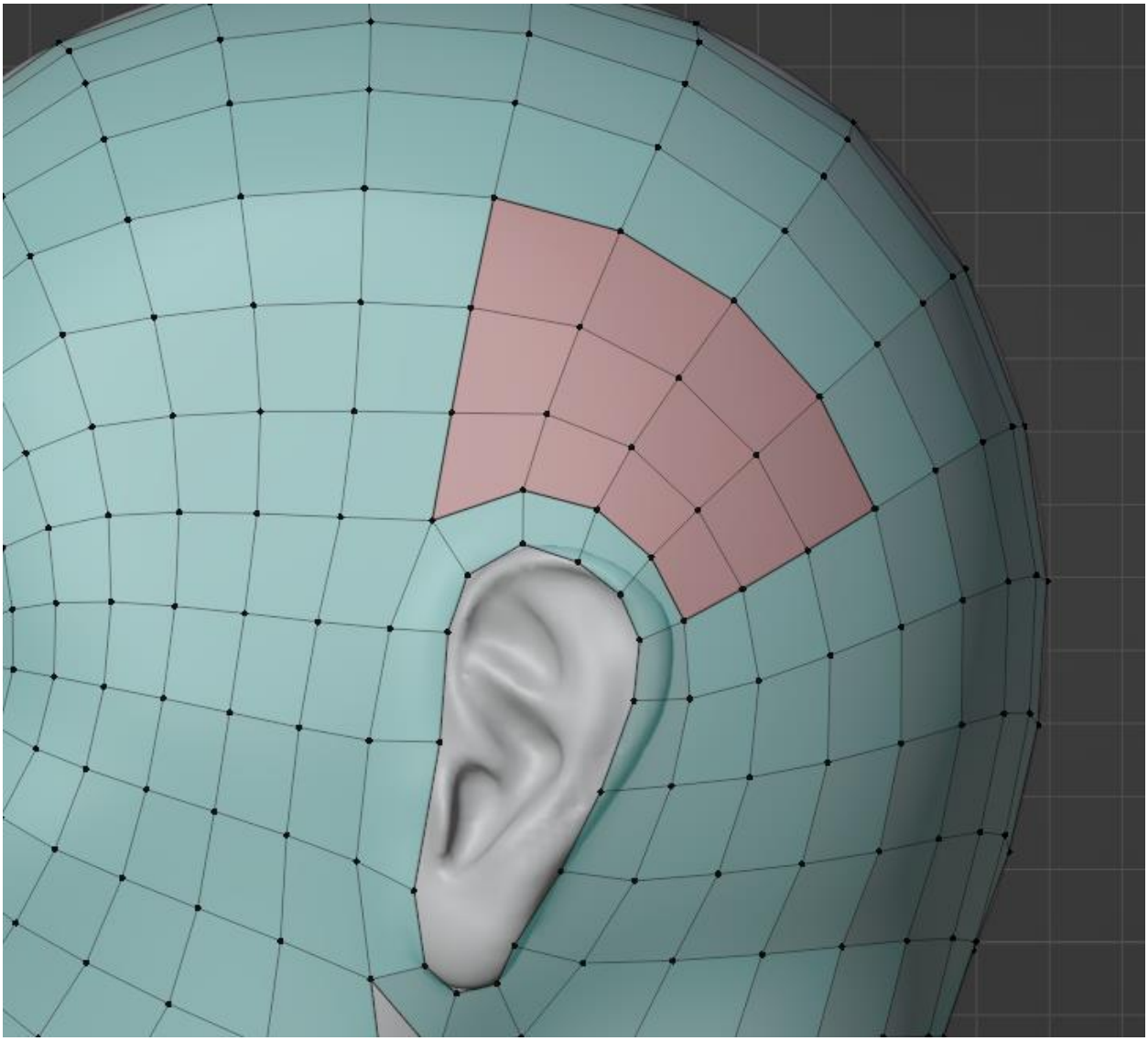


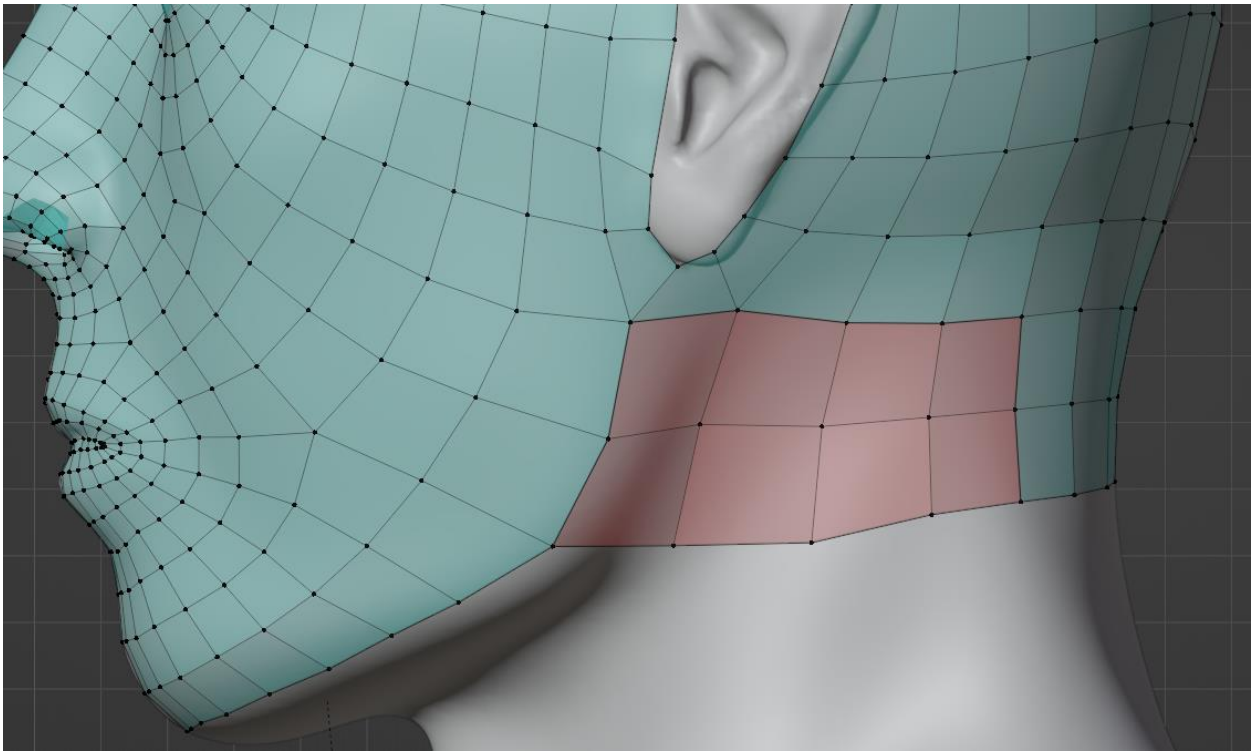


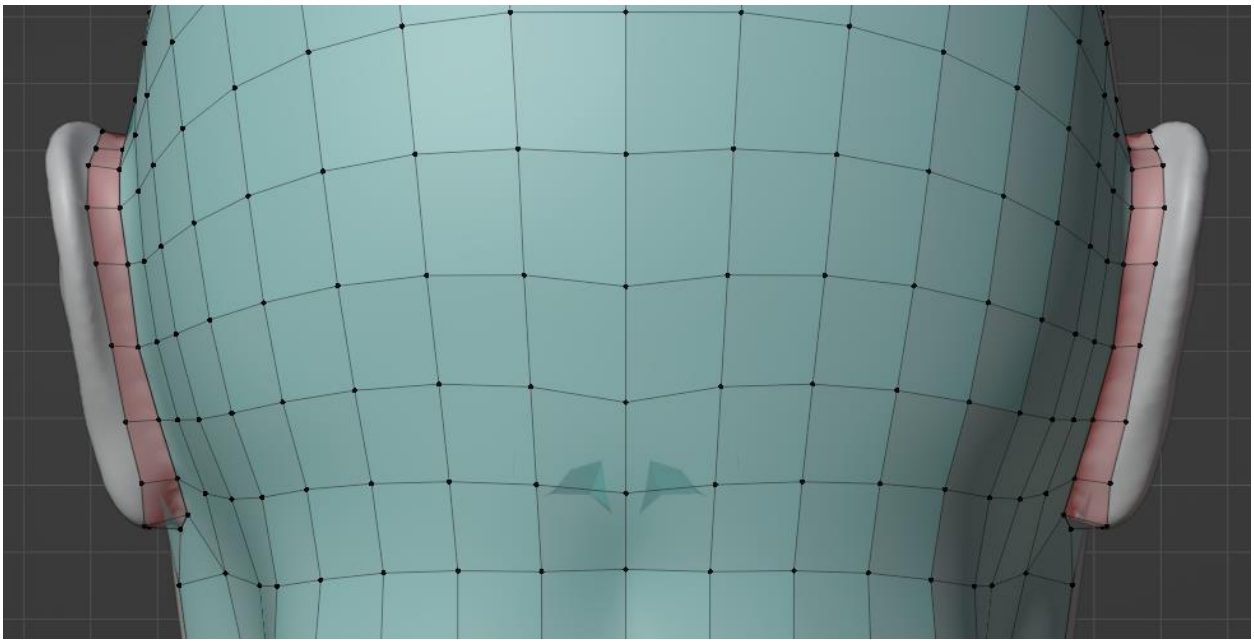


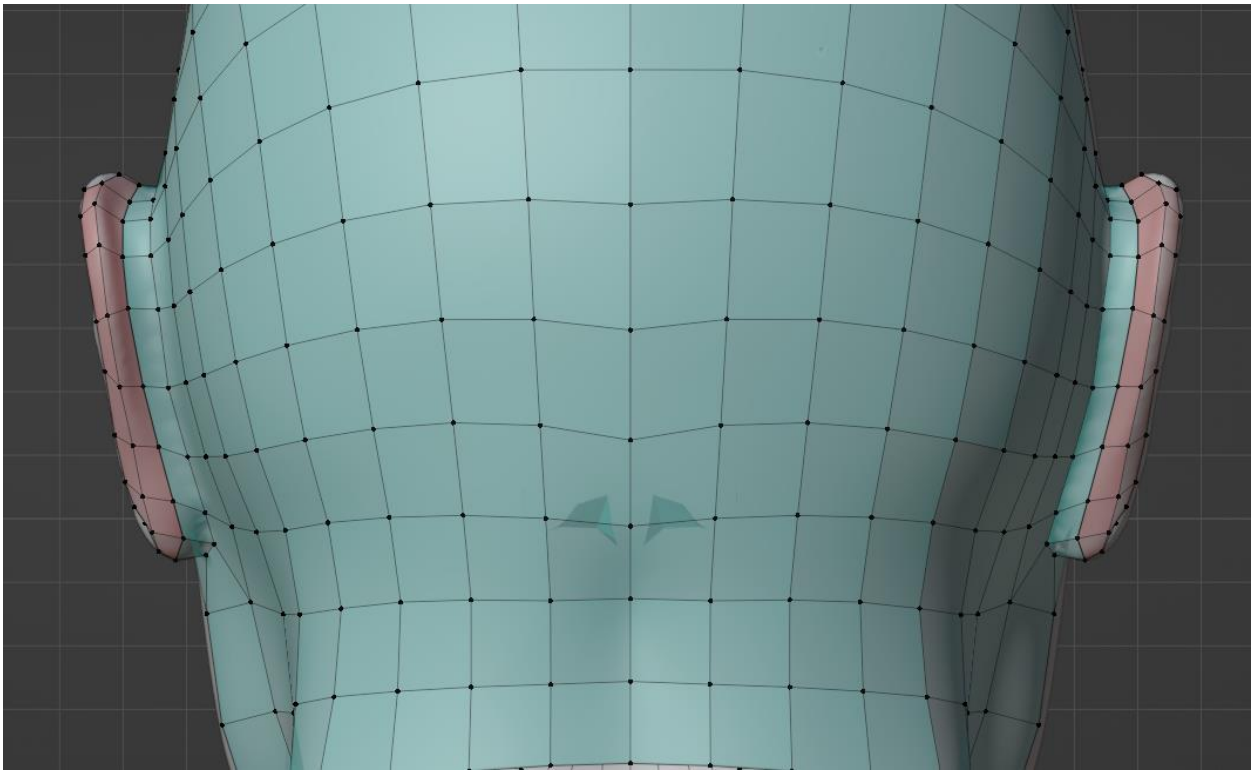


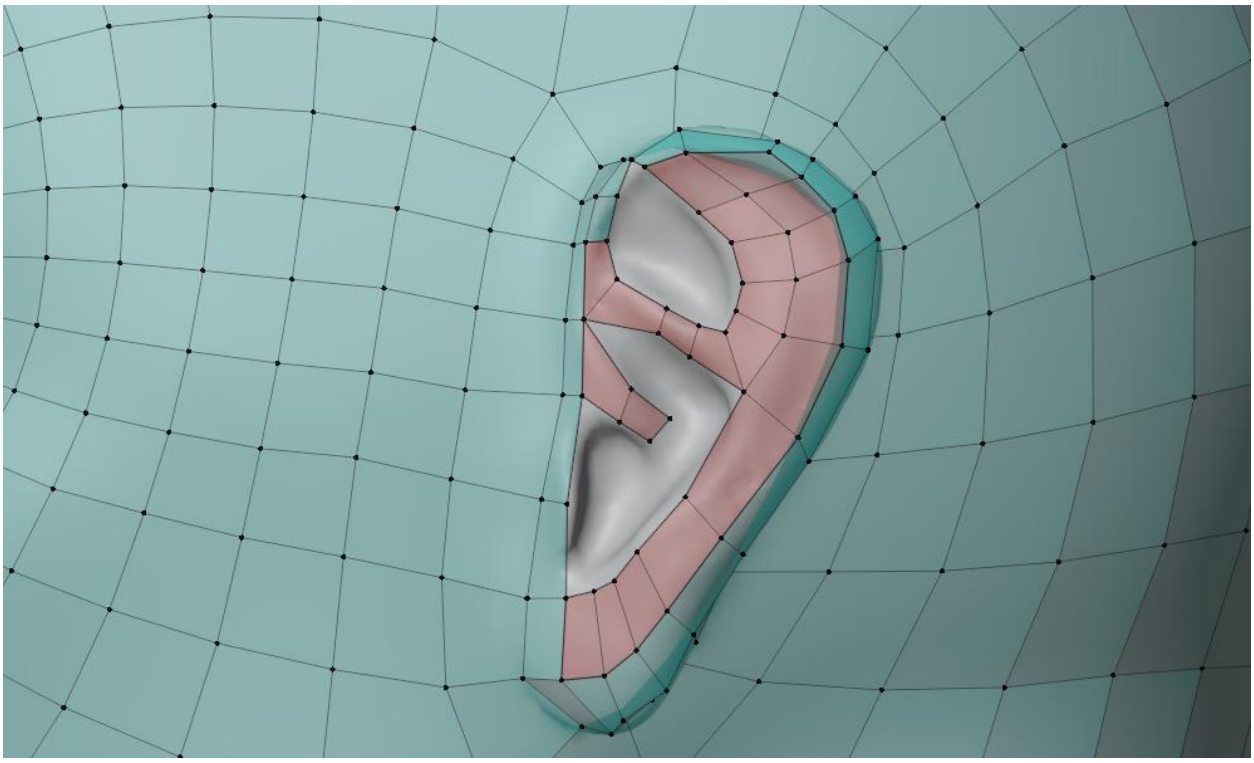


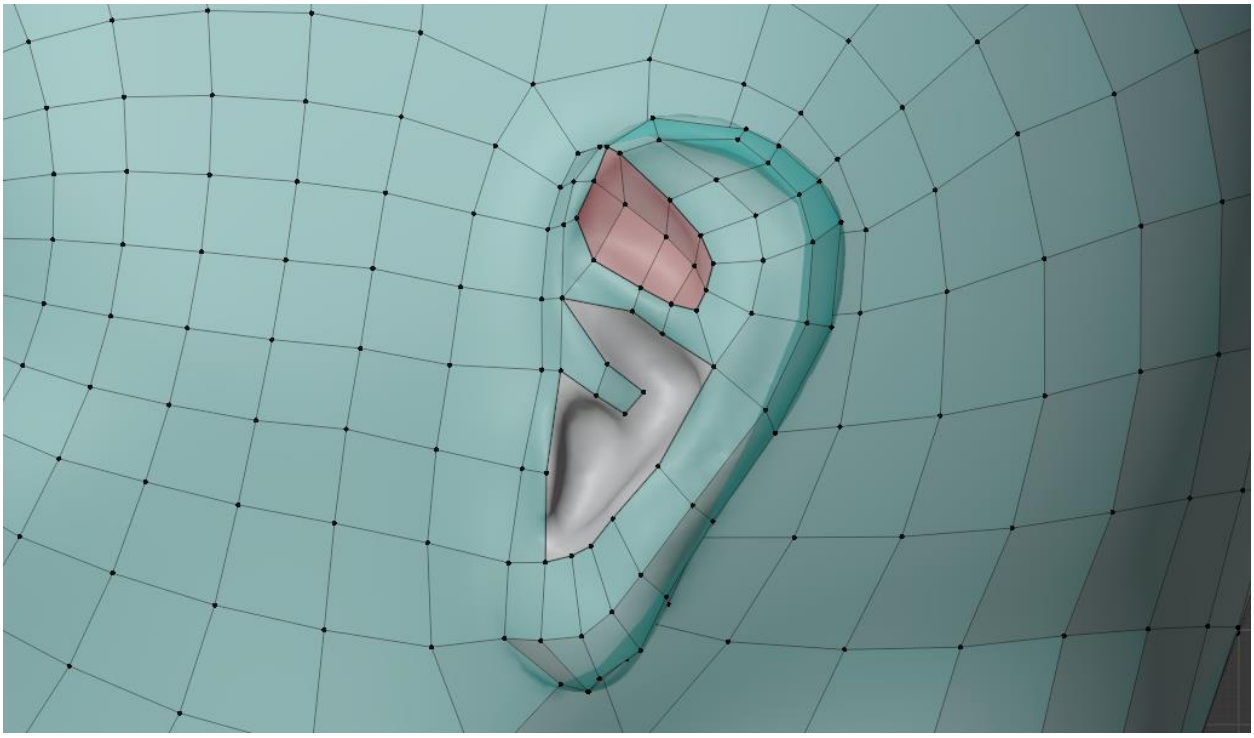


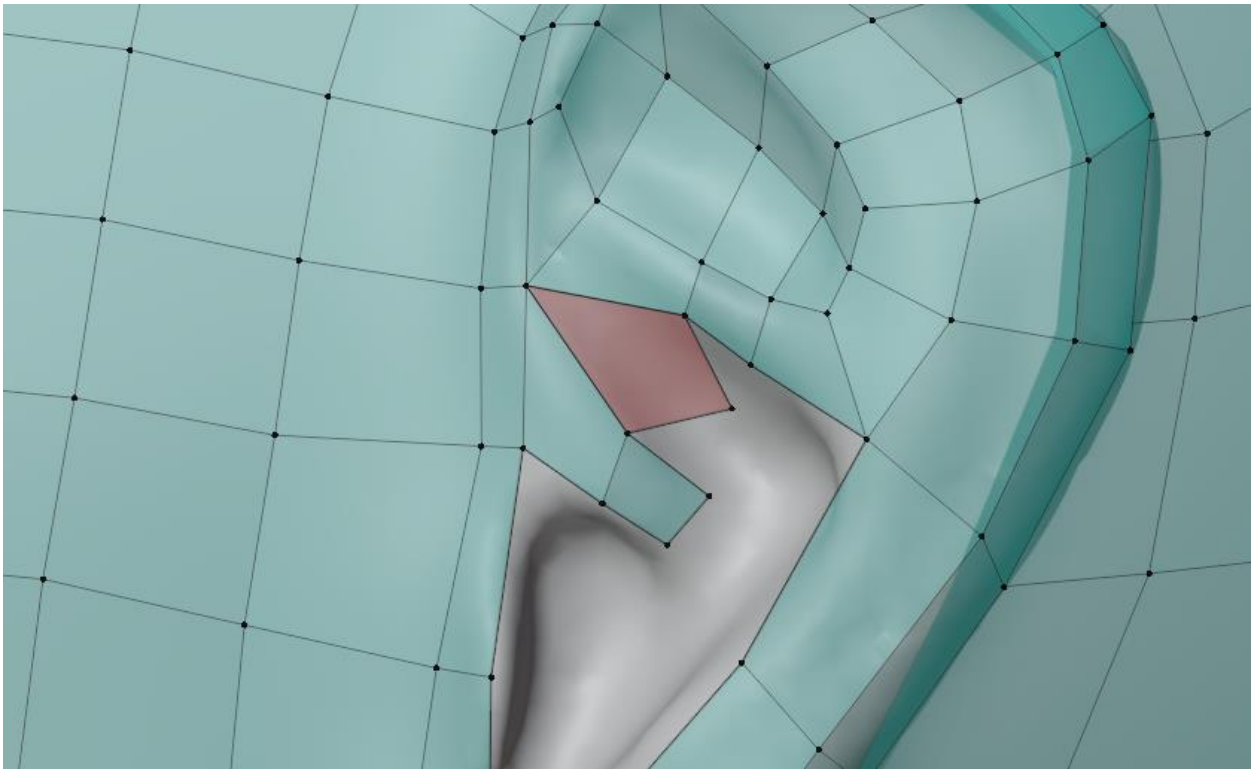


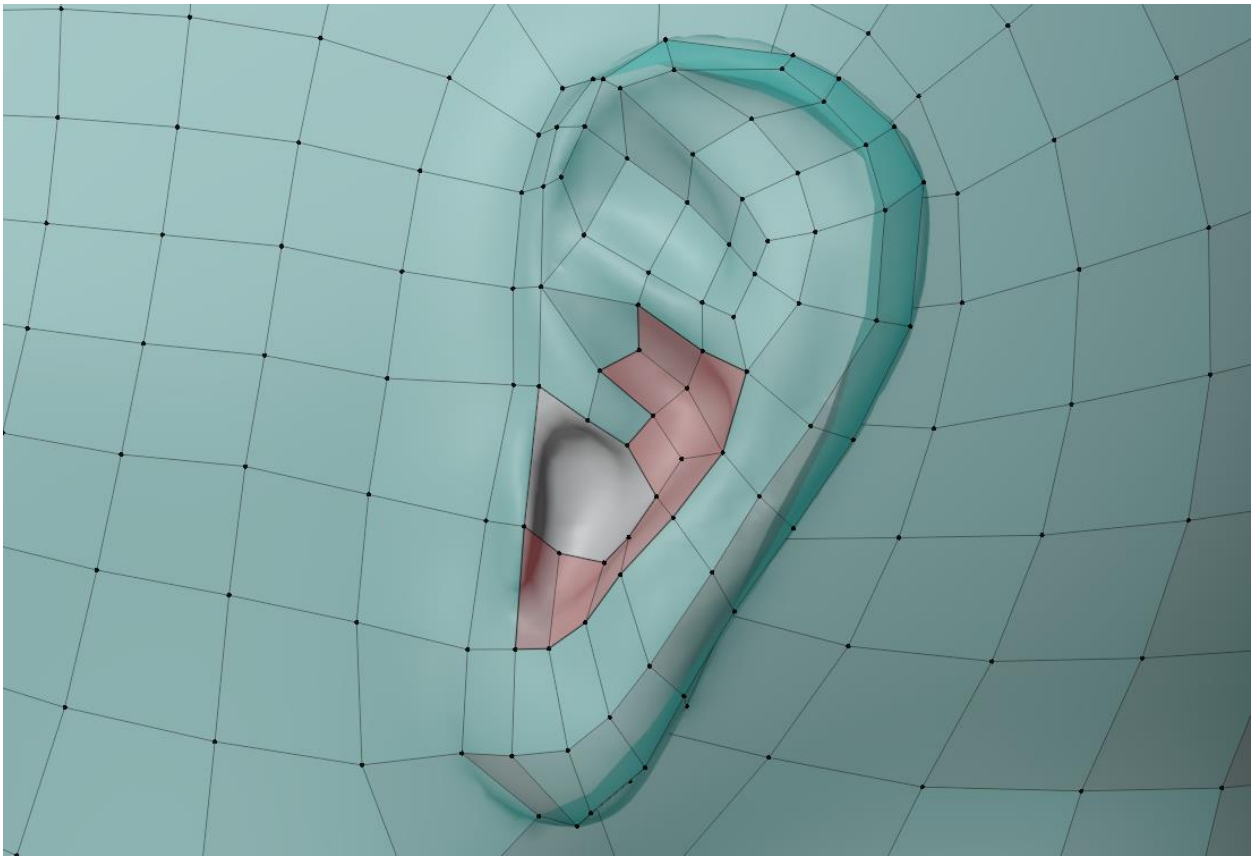


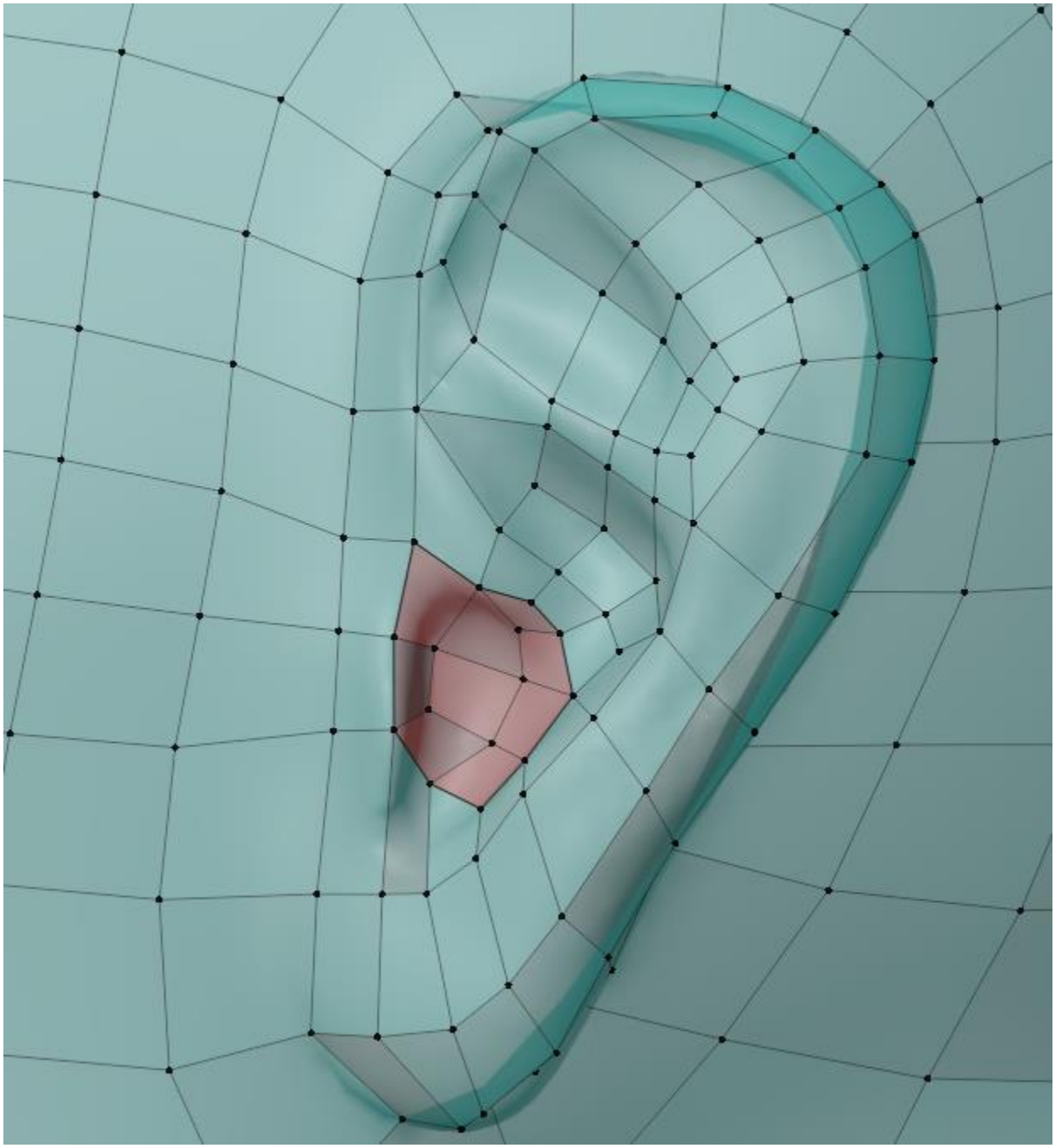


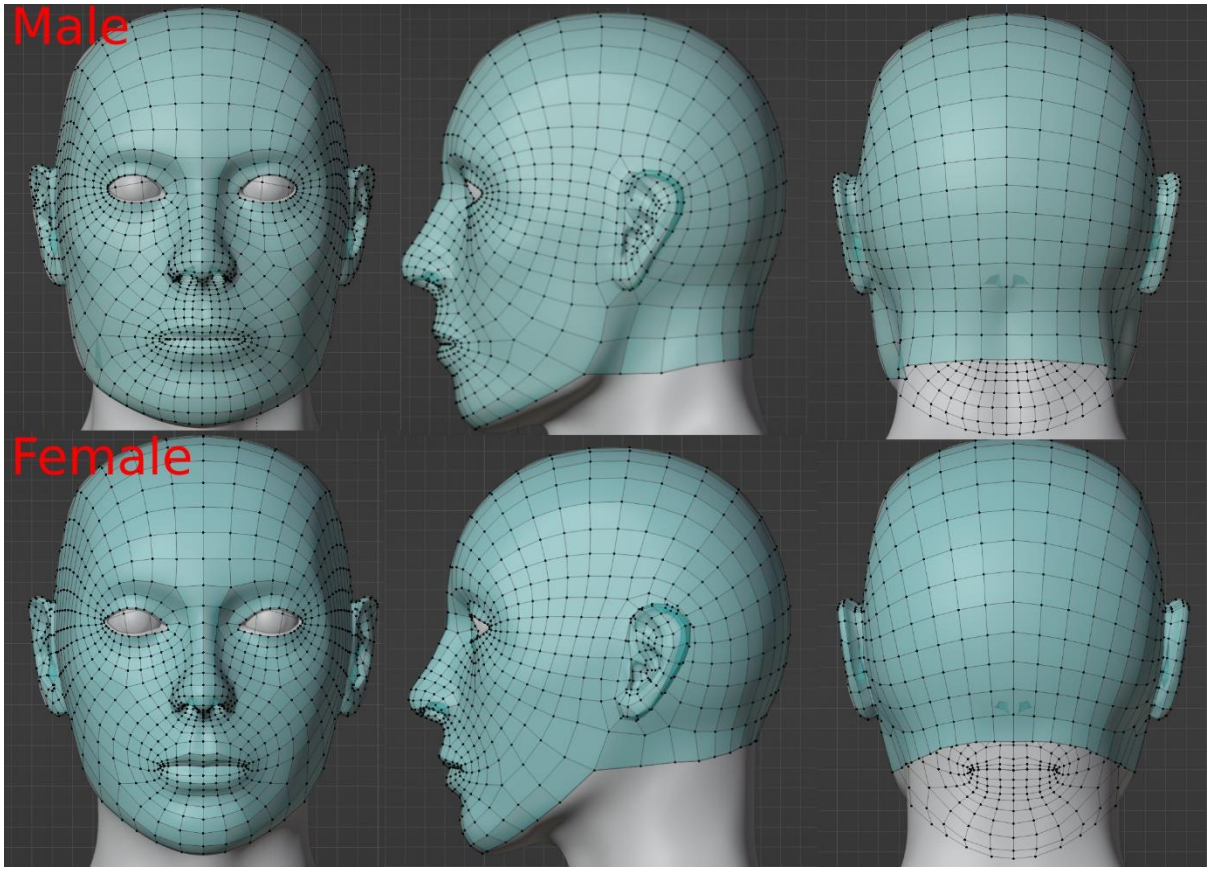


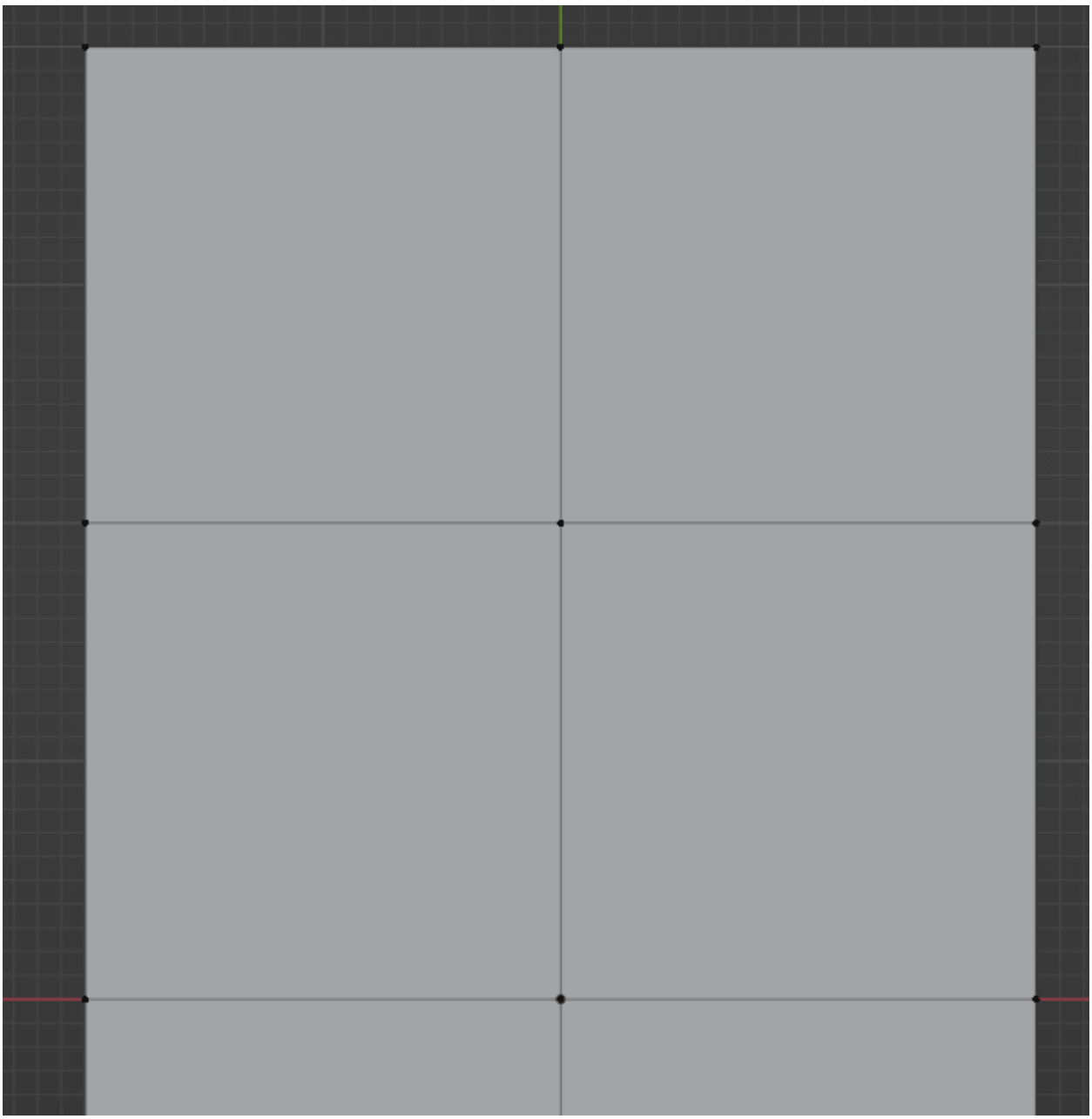


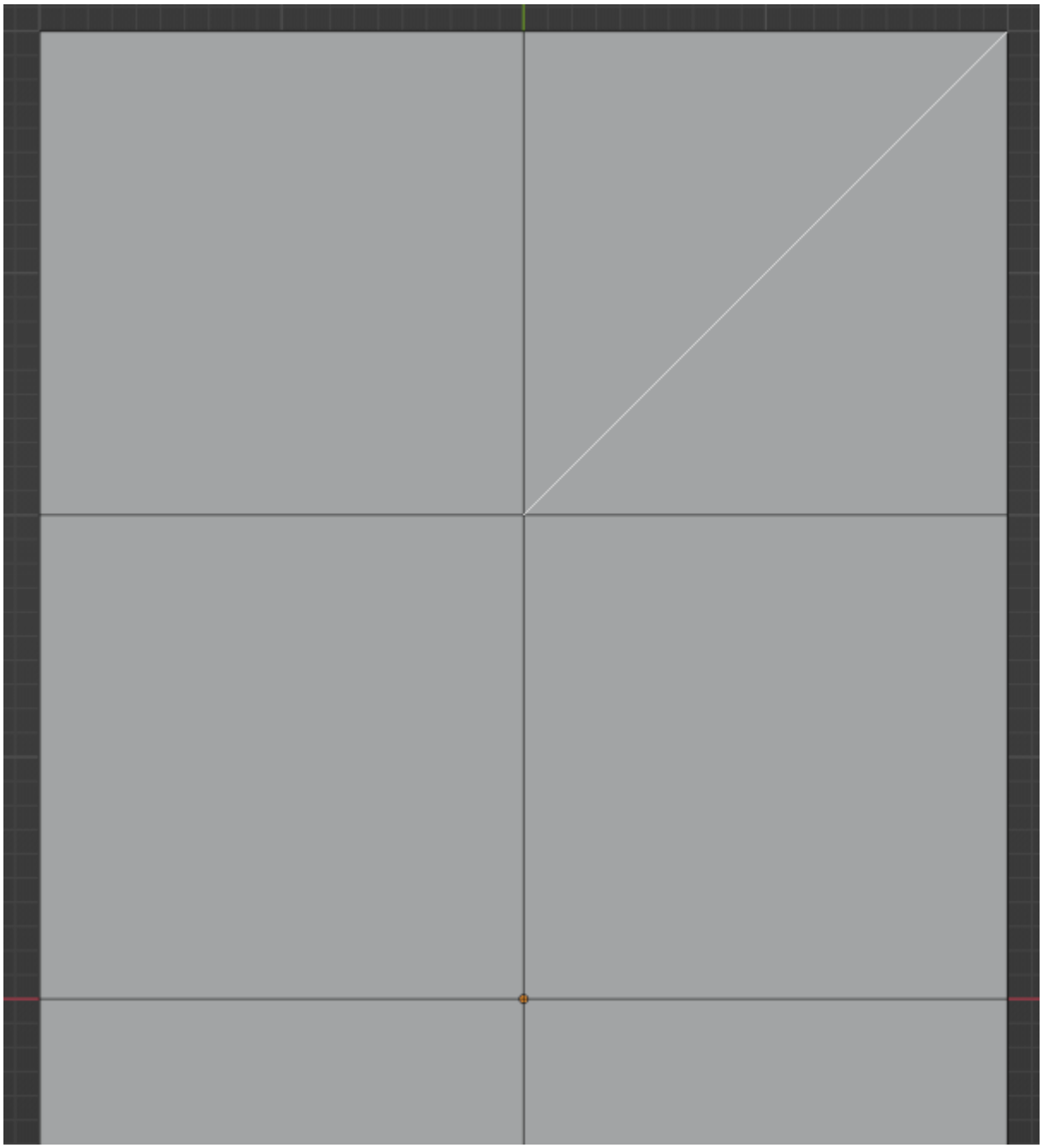


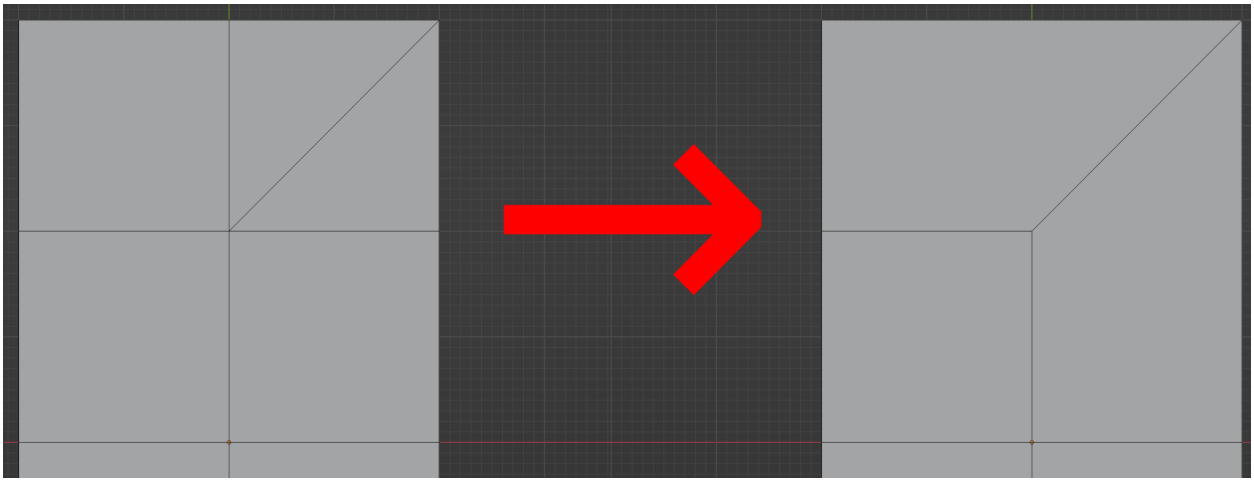


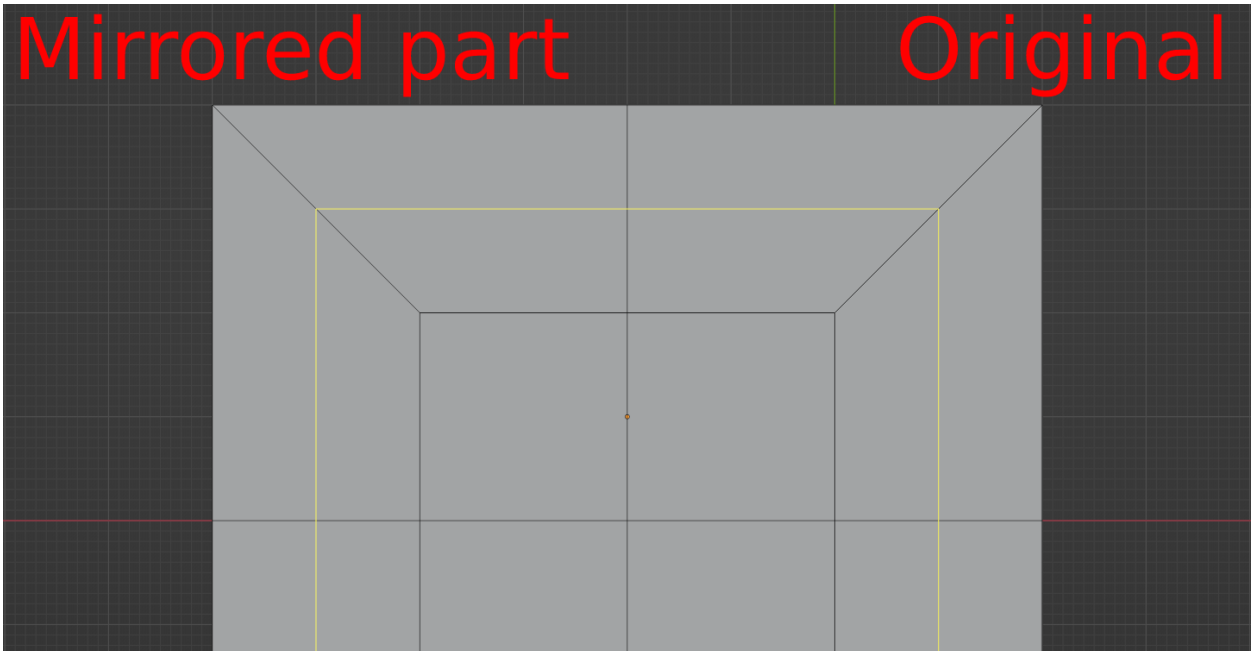


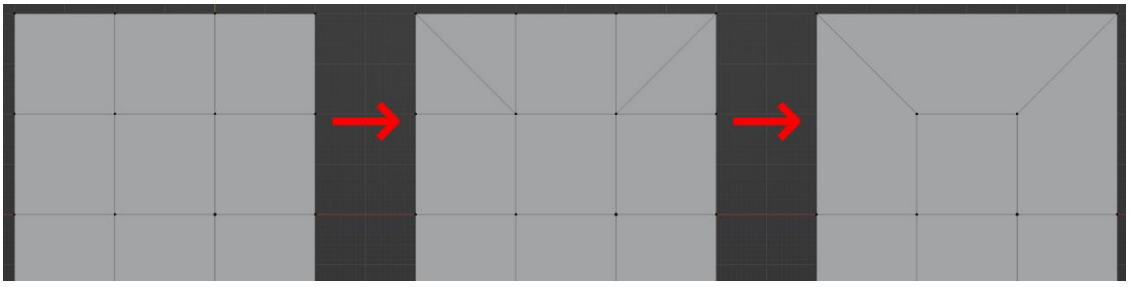

Male
Female

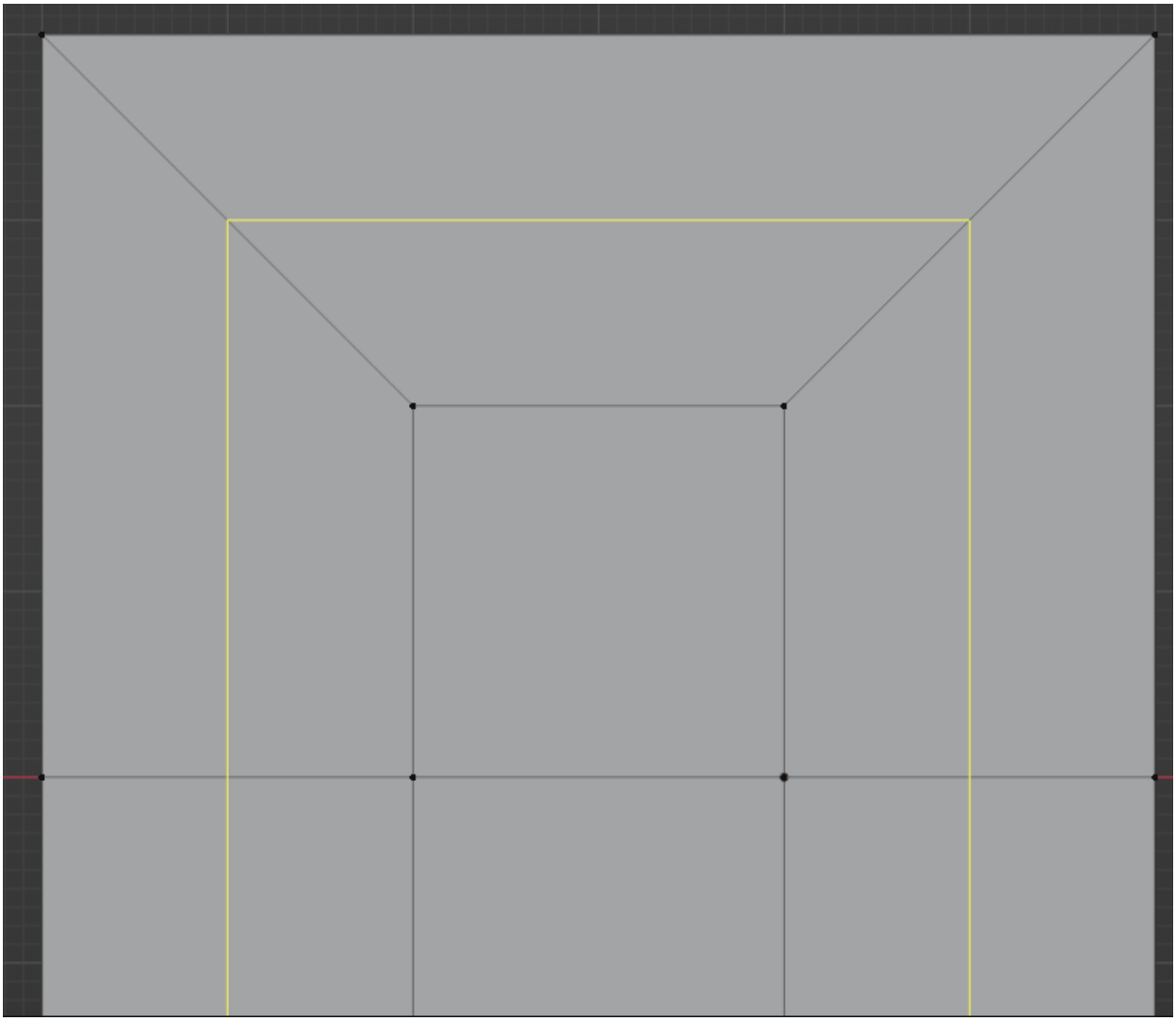


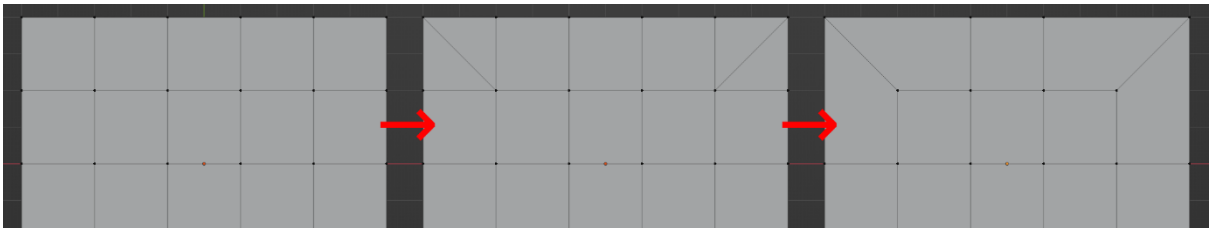


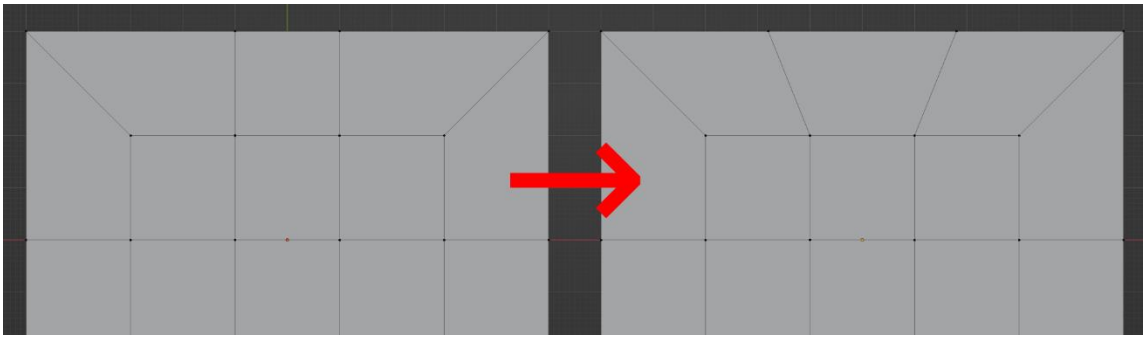


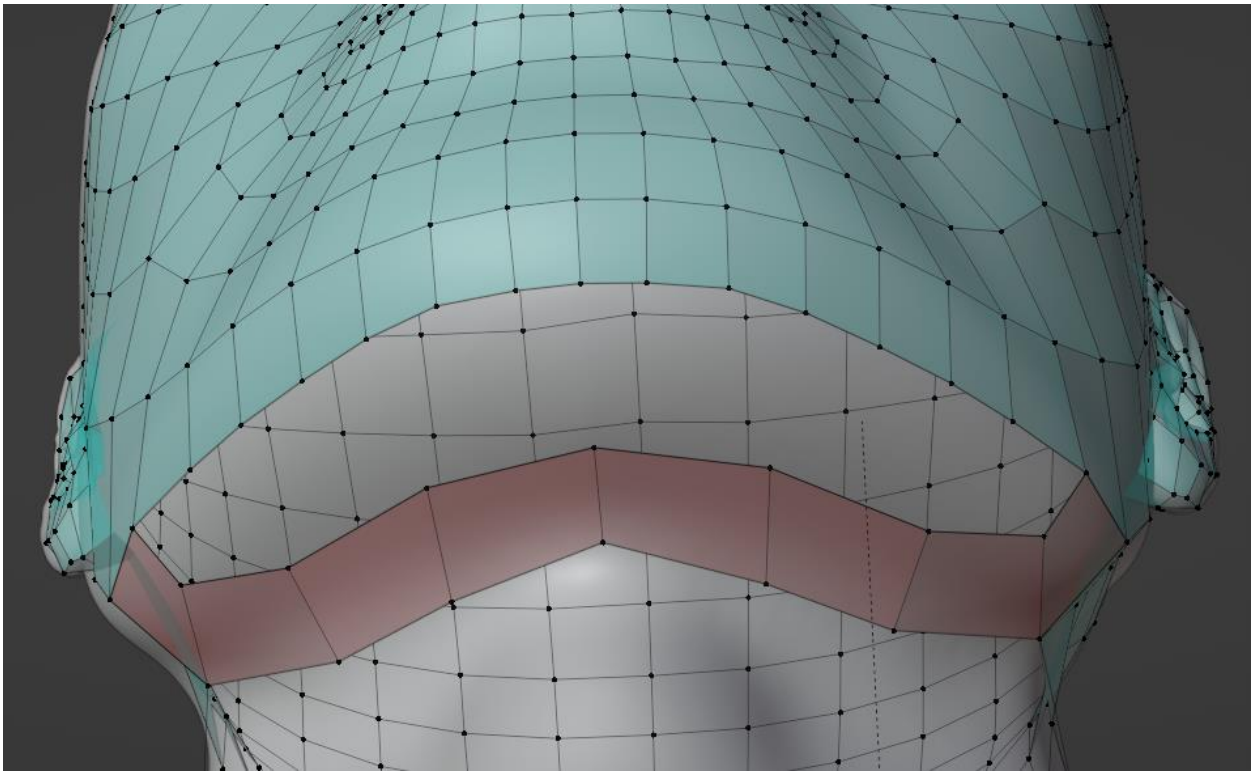

Mirrored part
Original

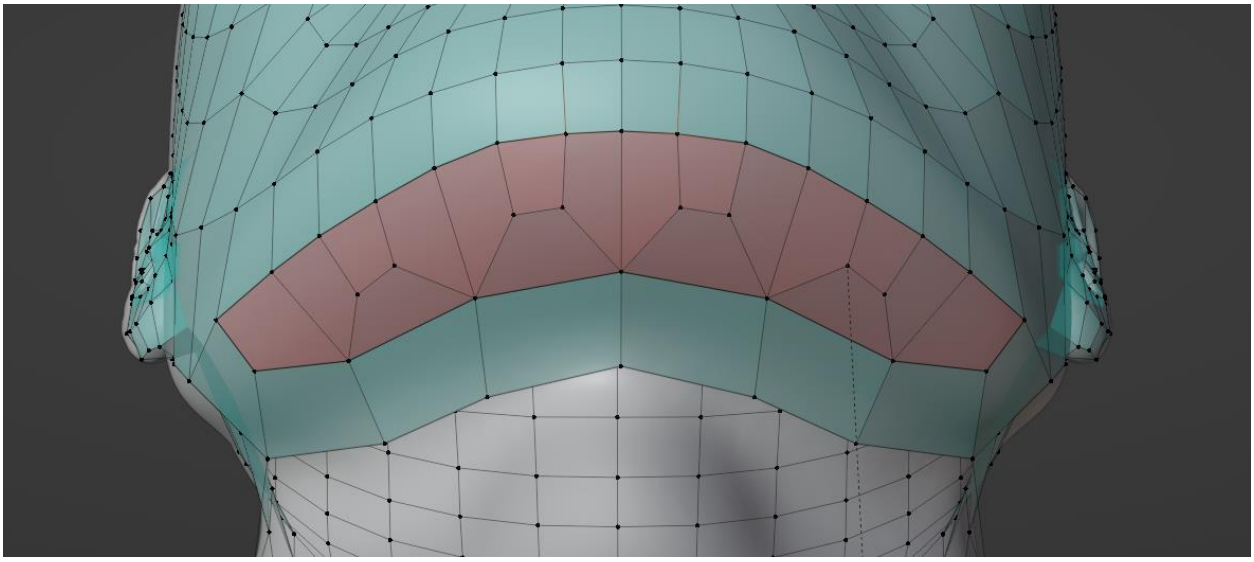


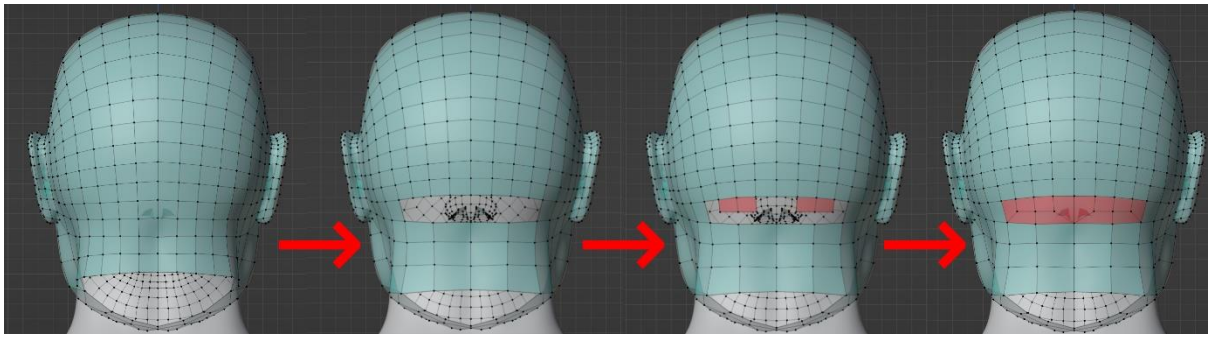


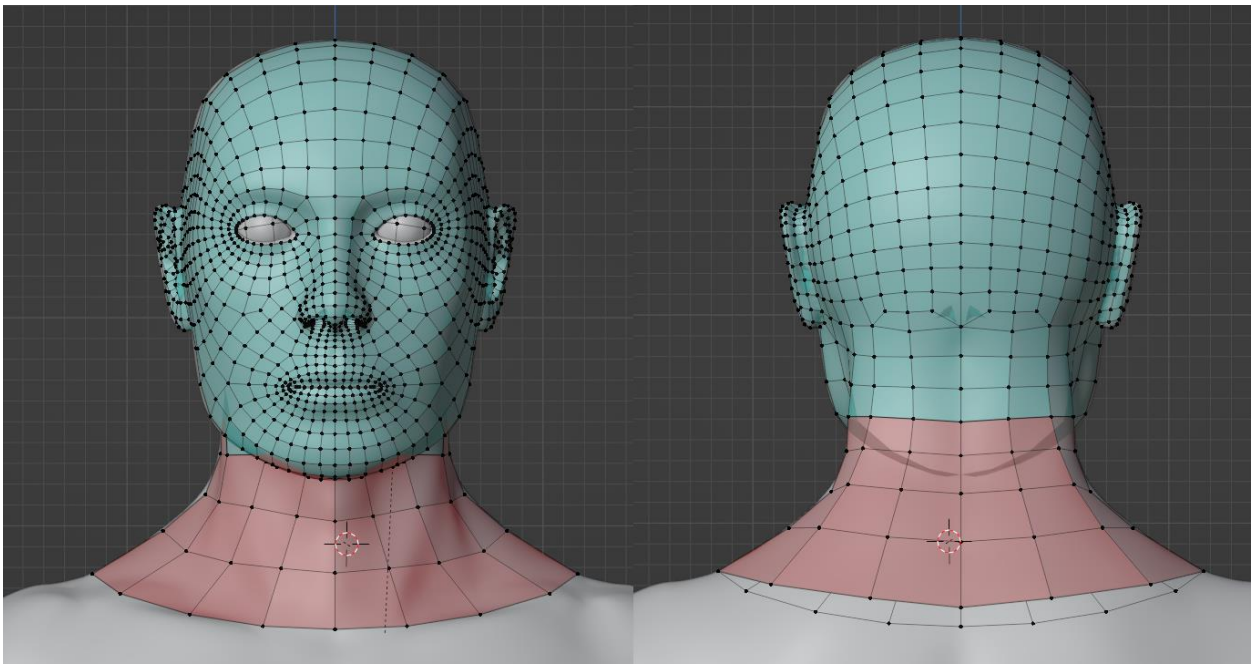


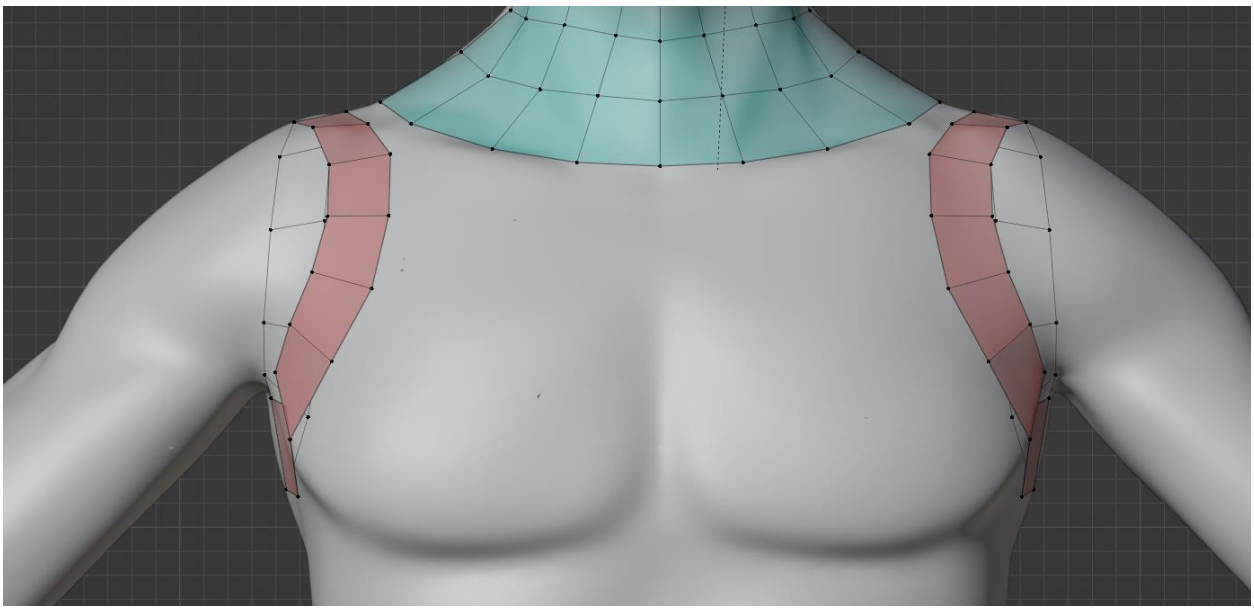


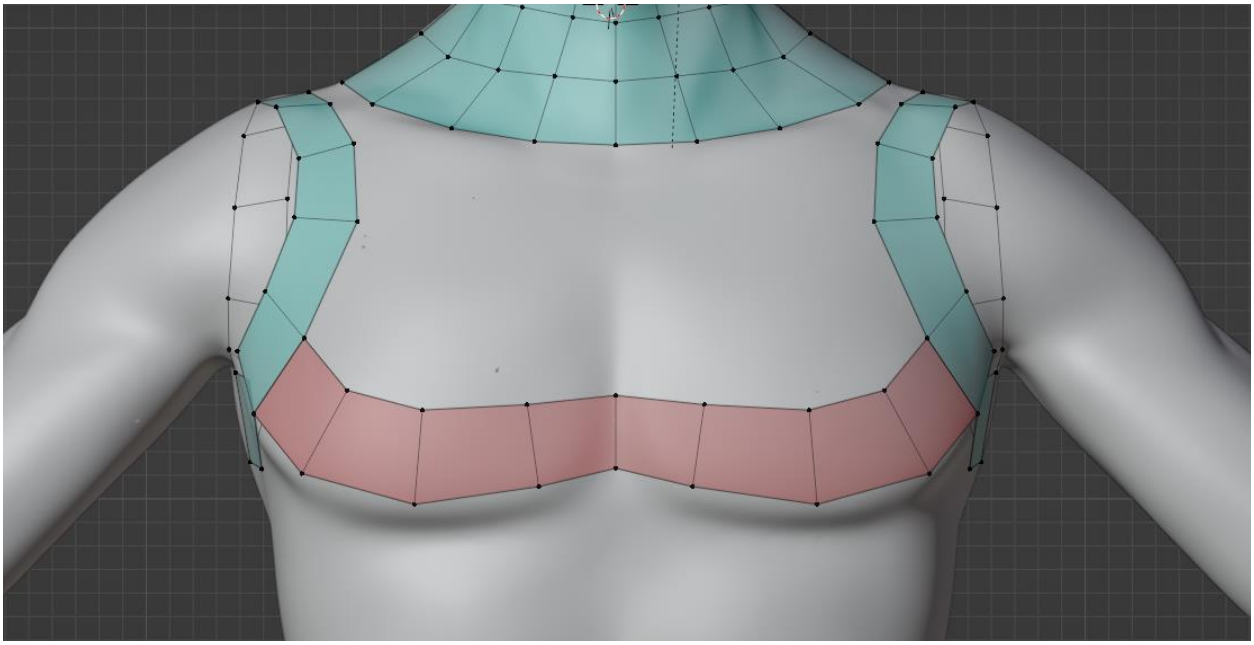


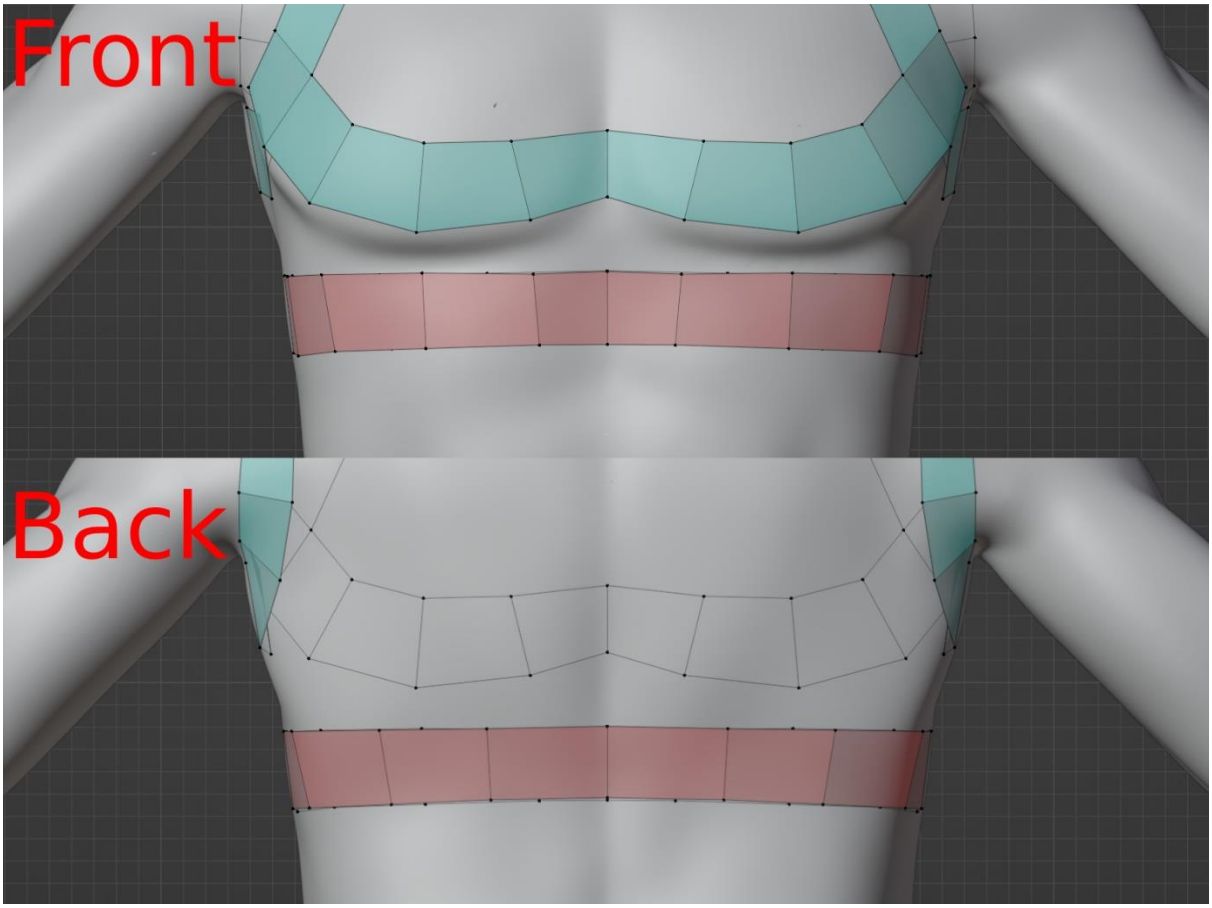


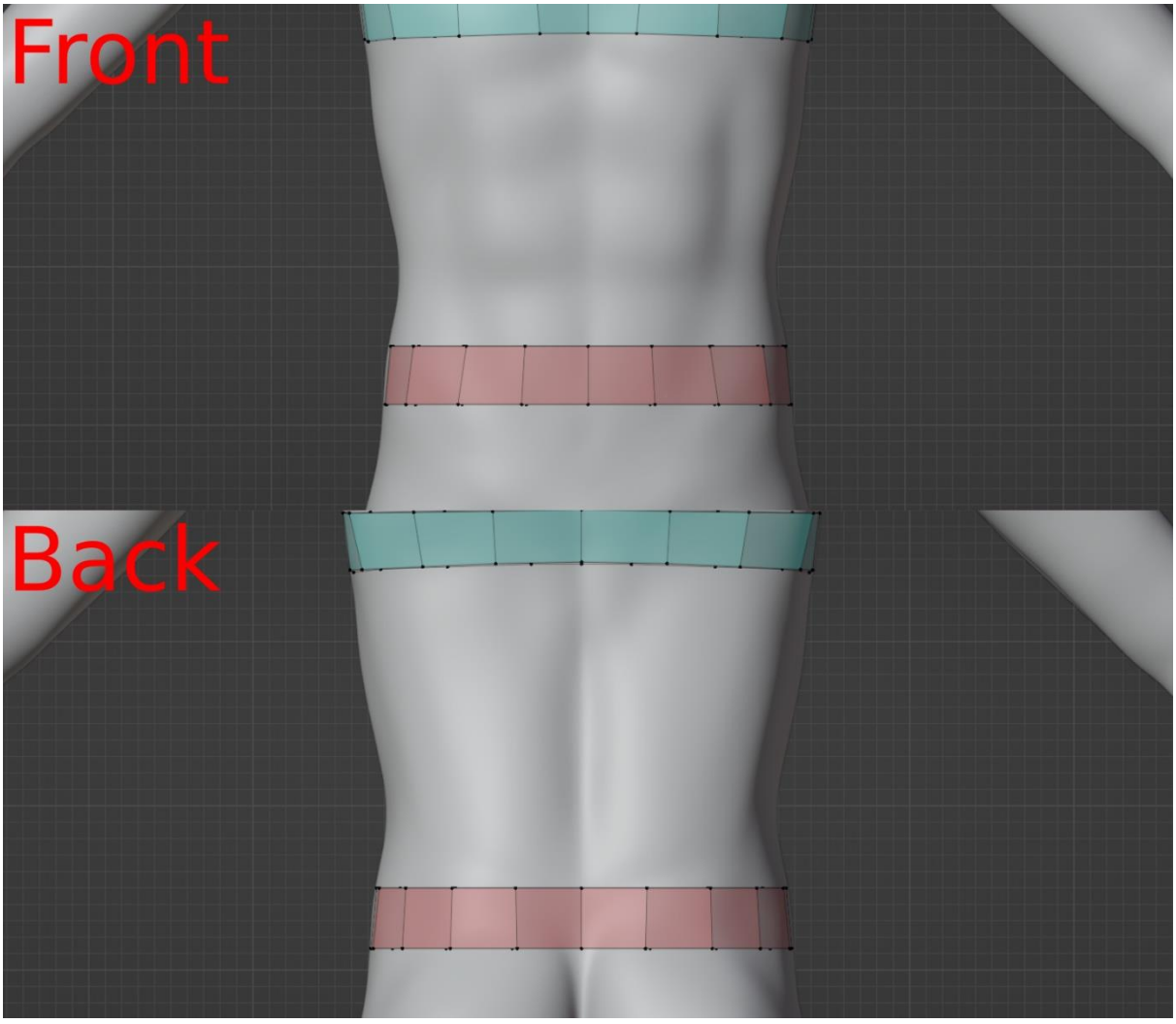


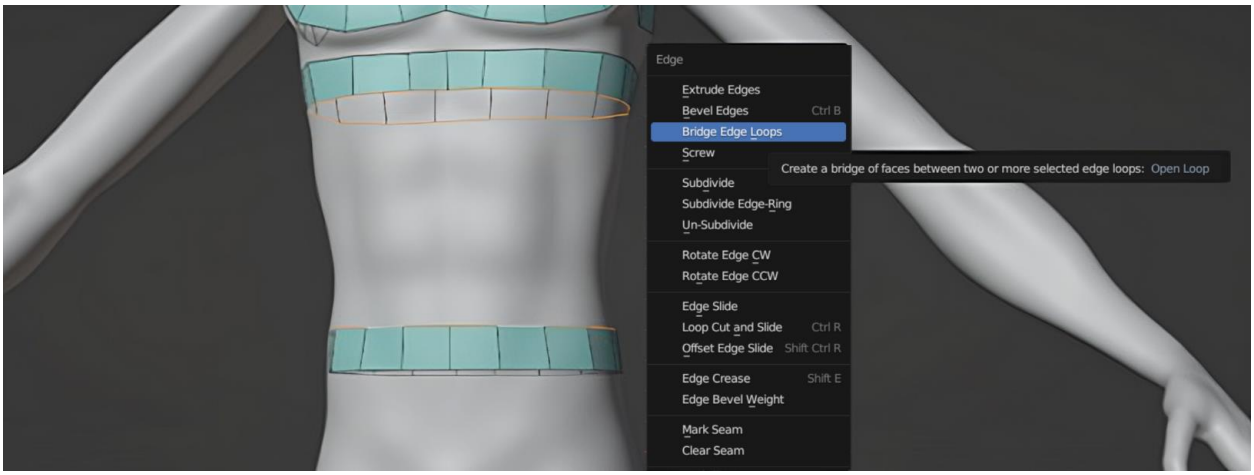


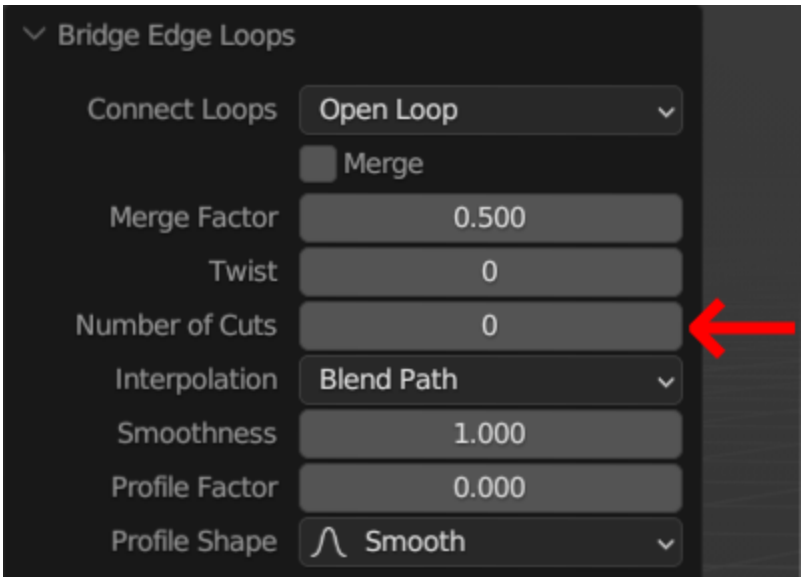





Front
Back


Front
Back


Edge
Extrude Edges
Bevel Edges Ctrl B
Bridge Edge Loops
Screw
Subdivide
Subdivide Edge-Ring
Un-Subdivide
Rotate Edge CW
Rotate Edge CCW
Edge Slide
Loop Cut and Slide Ctrl R
Offset Edge Slide Shift Ctrl R
Edge Crease Shift E
Edge Bevel Weight
Mark Seam
Clear Seam
Create a bridge of faces between two or more selected edge loops: Open Loop


Bridge Edge Loops
Connect Loops
Open Loop
Merge
Merge Factor
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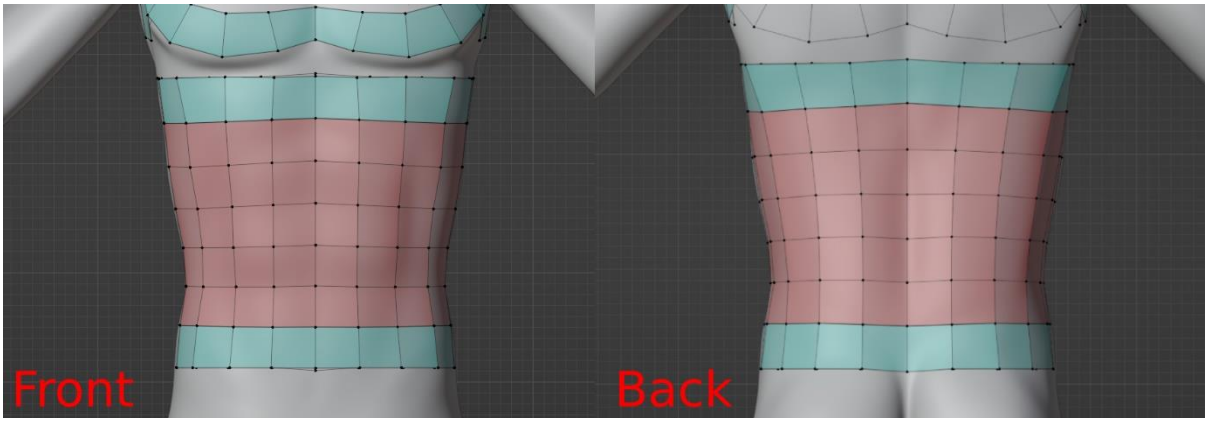
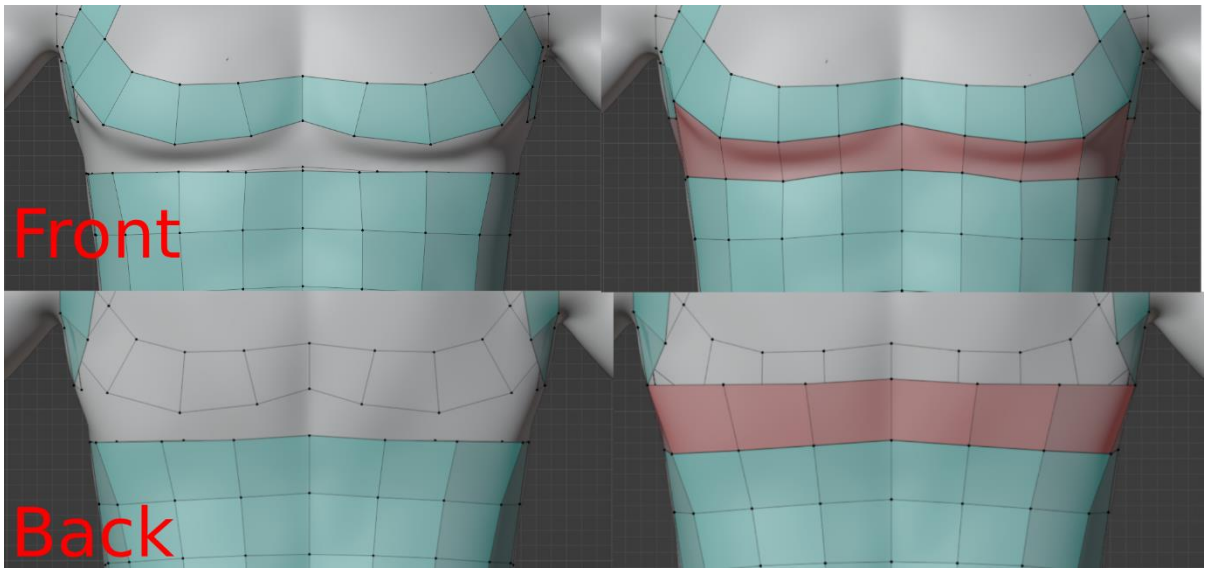
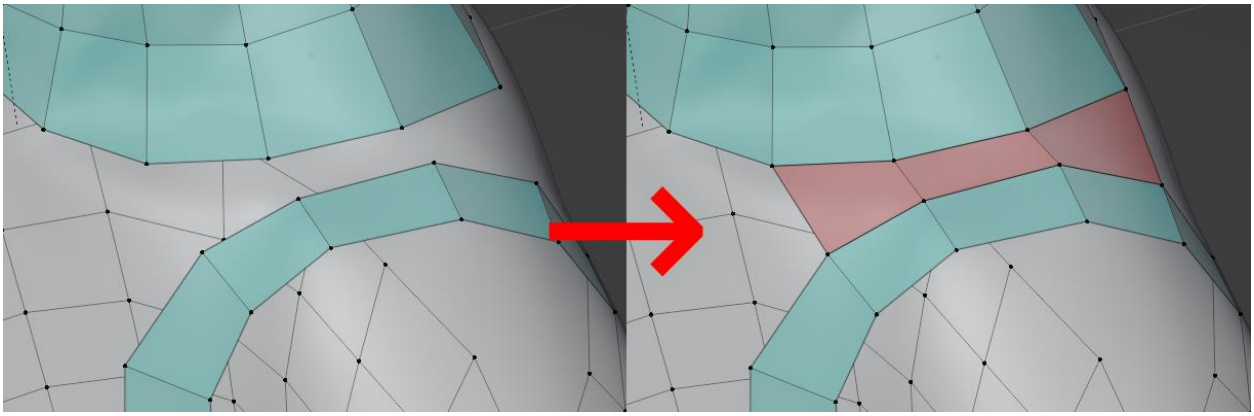
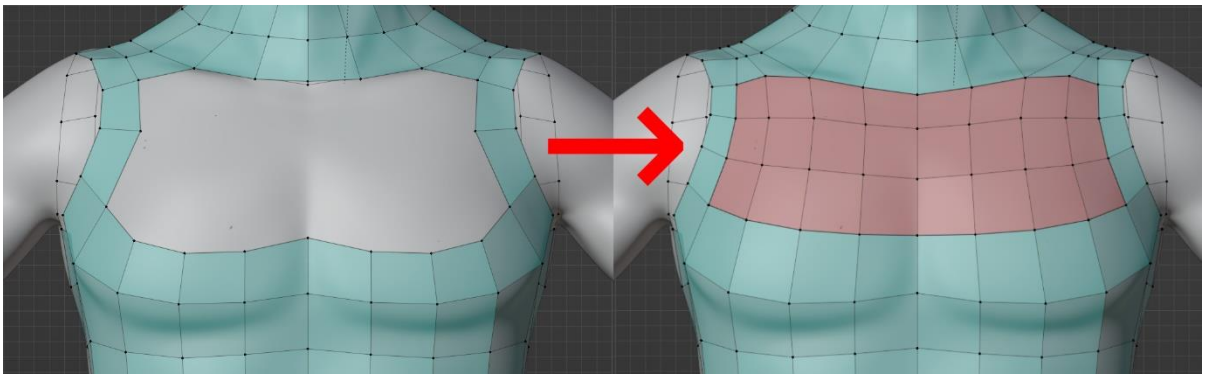
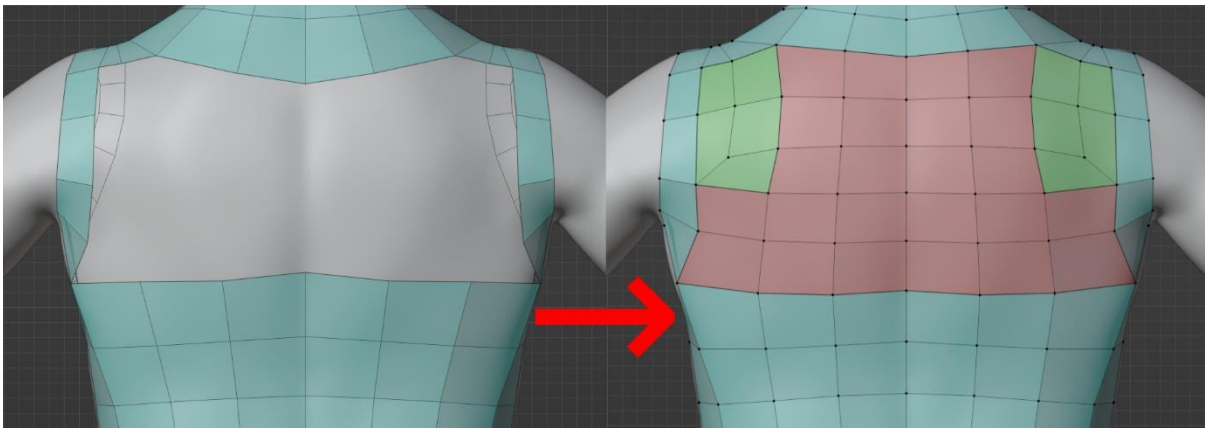
Twist
0
Number of Cuts
0
Interpolation
Blend Path
Smoothness
1.000
Profile Factor
0.000
Profile Shape
Smooth

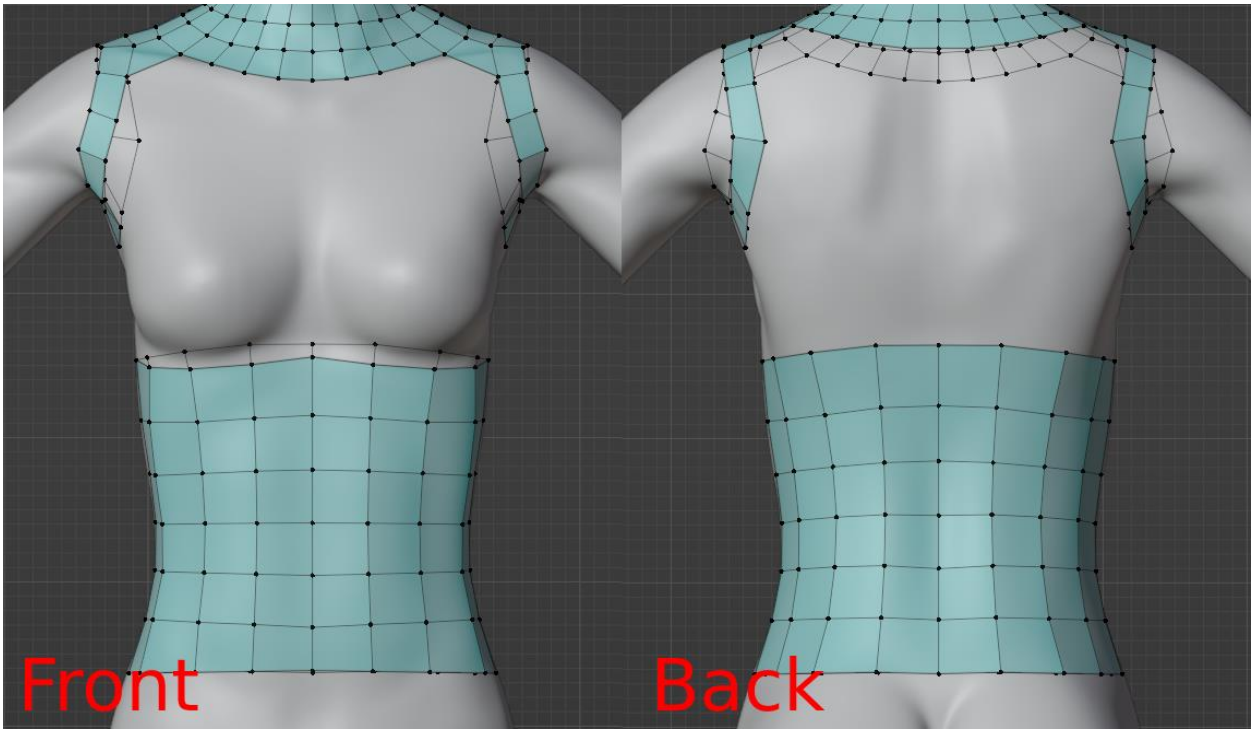

Front
Back

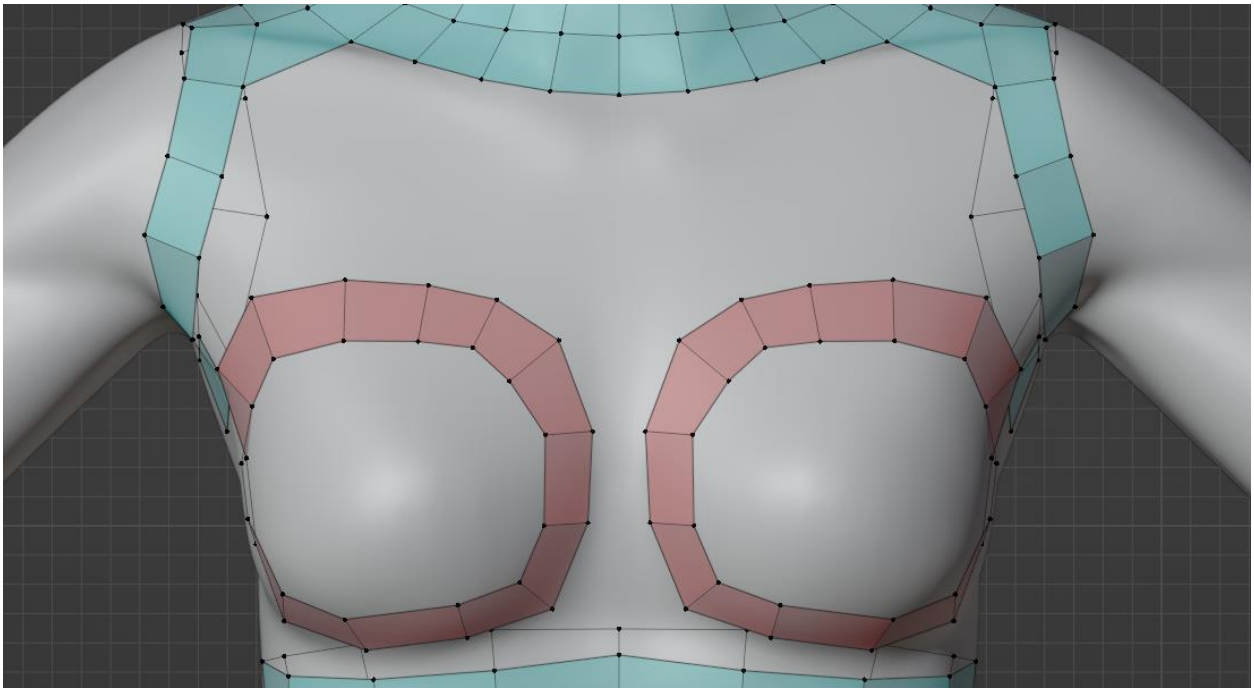

Front
Back

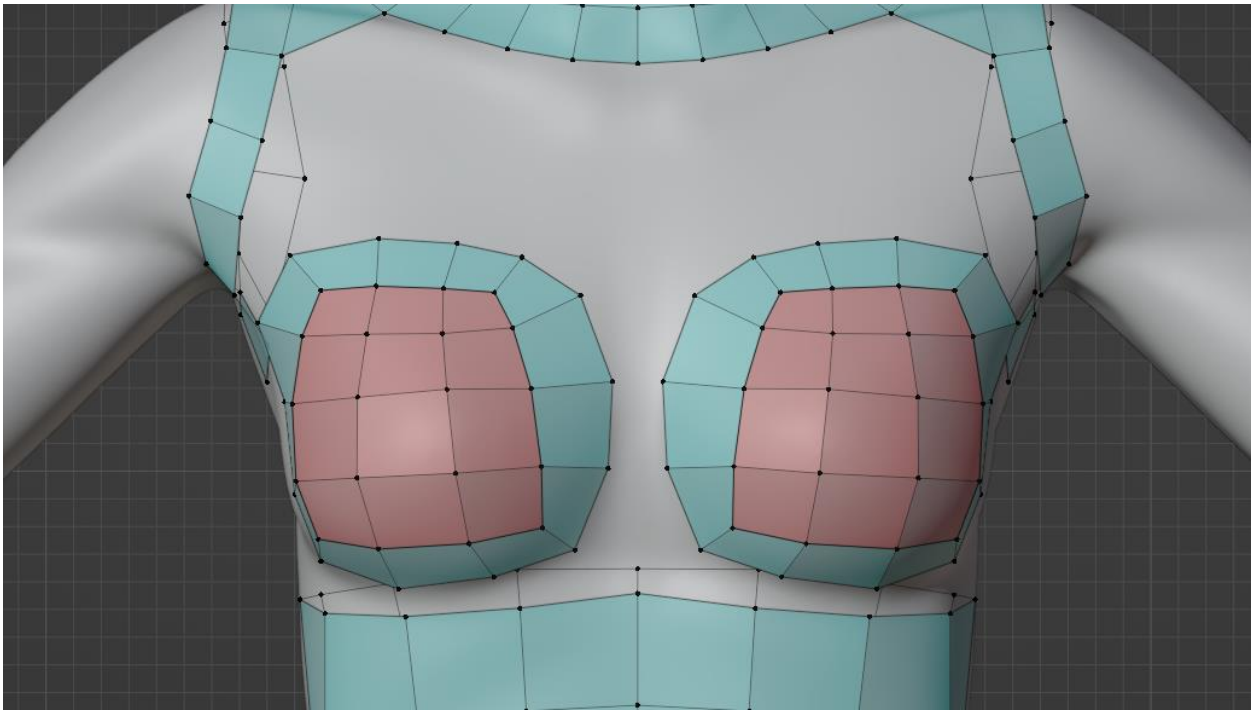


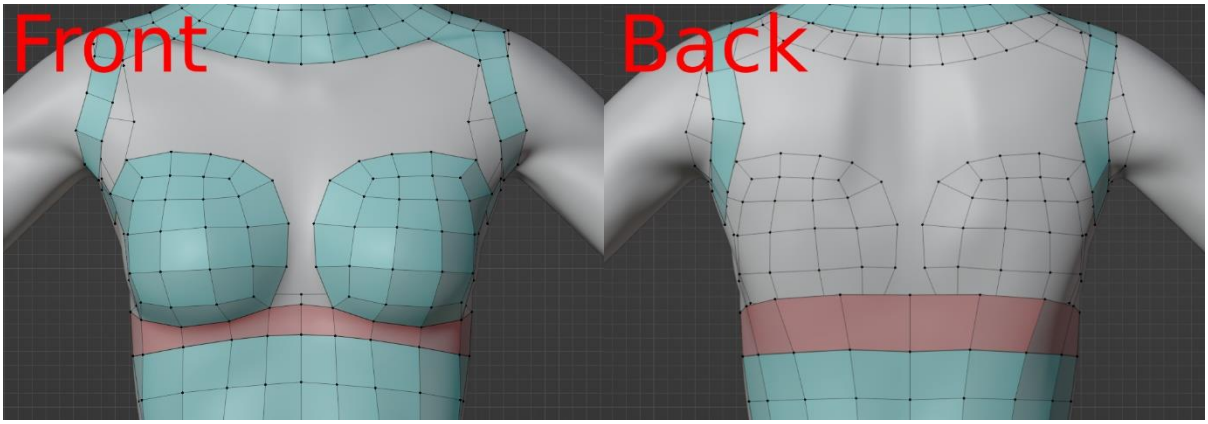


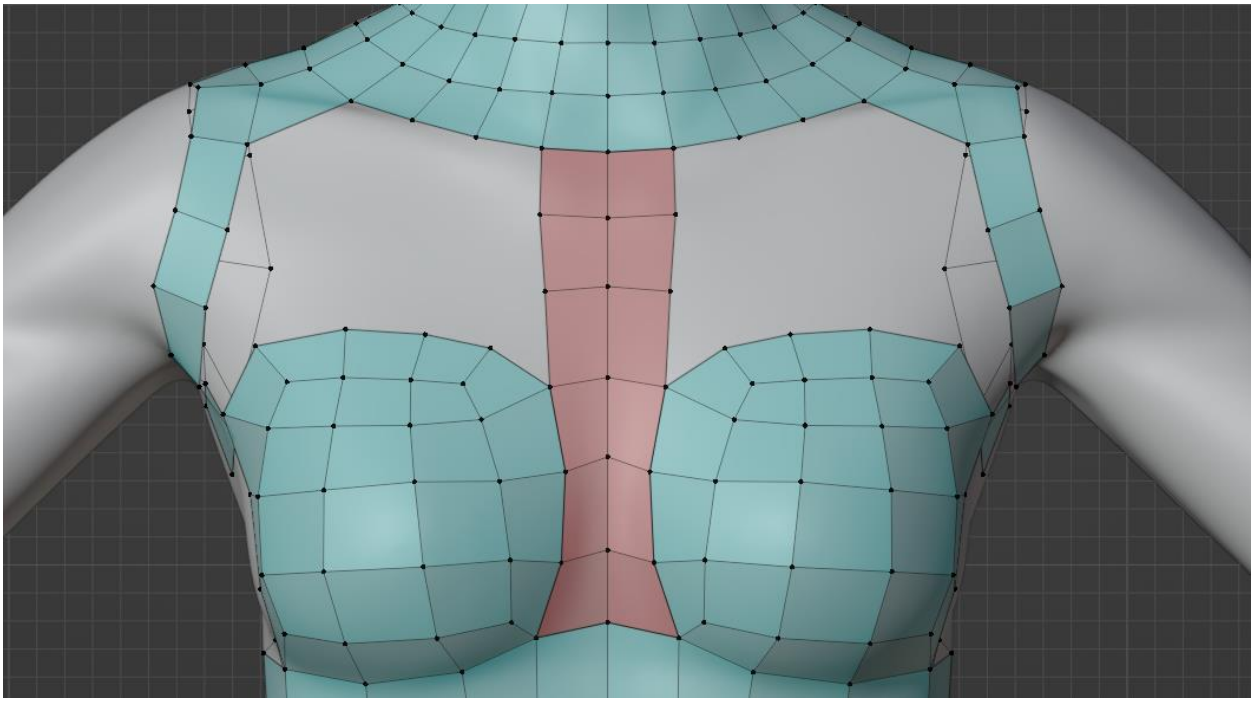


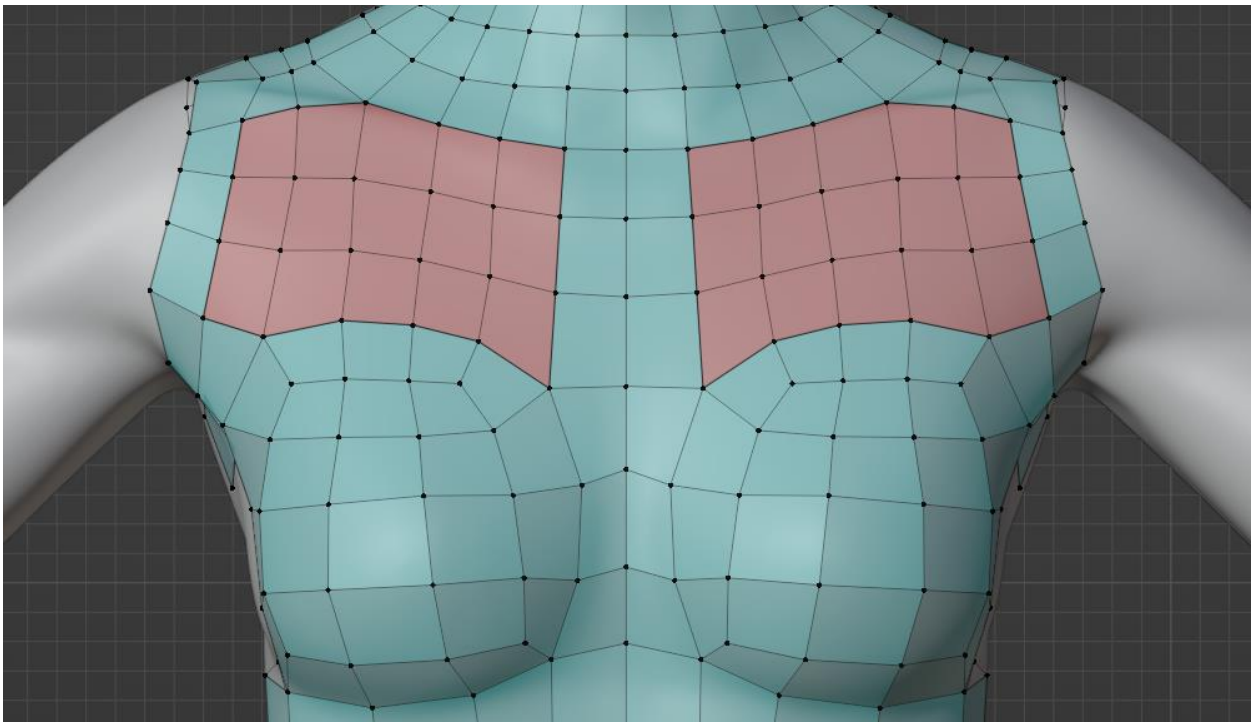

Front
Back

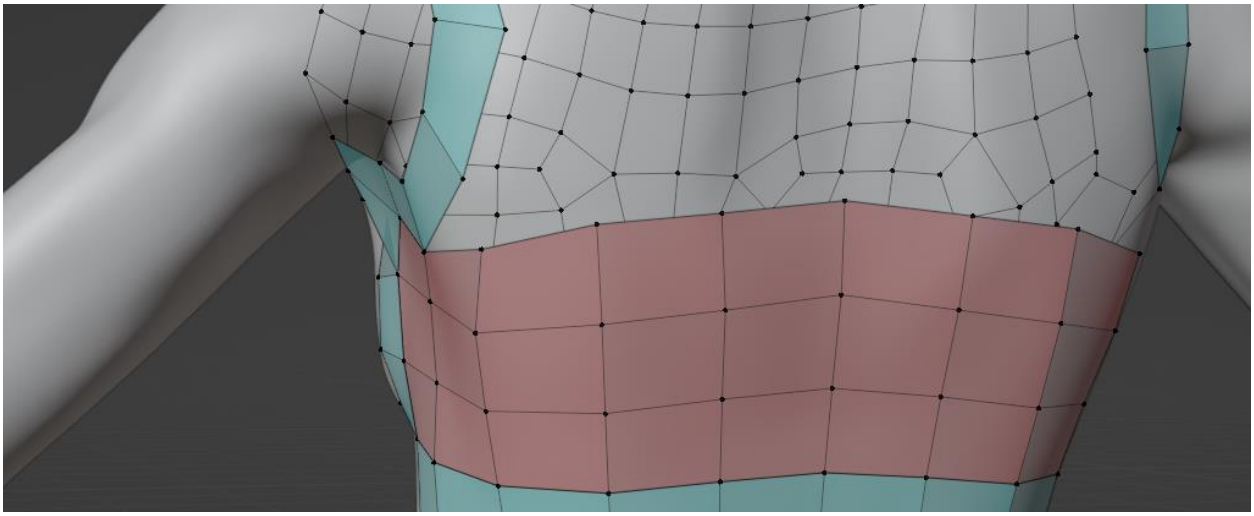


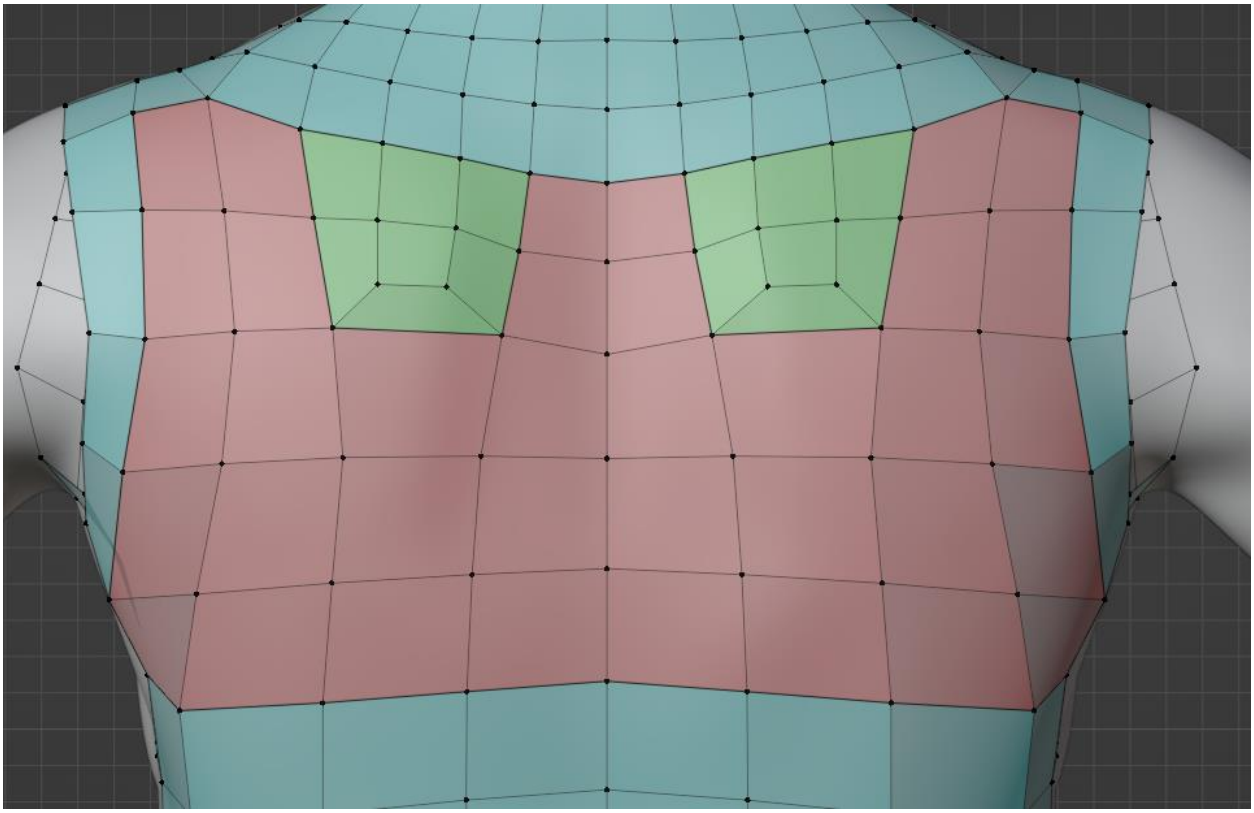


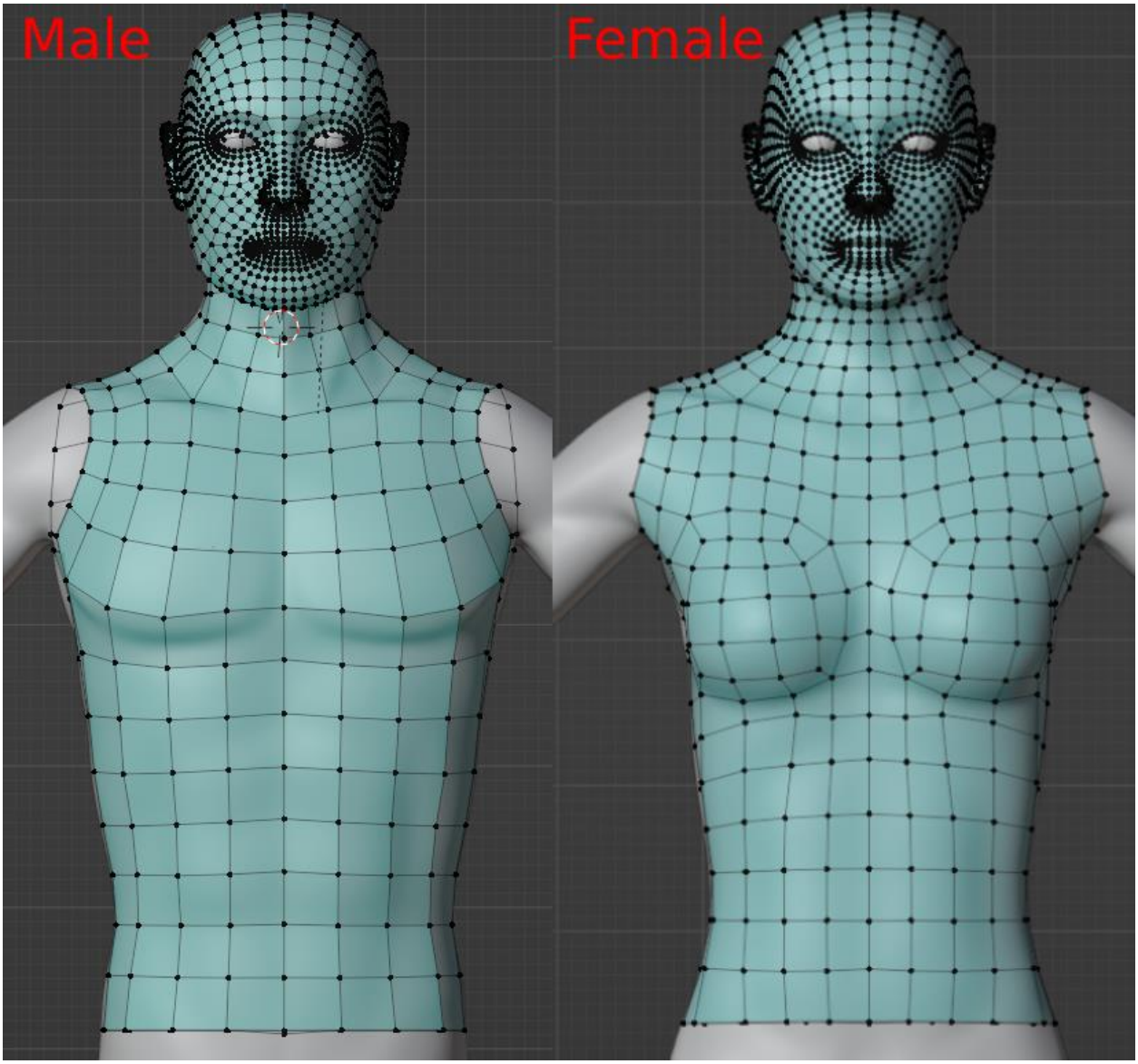

Front
Back

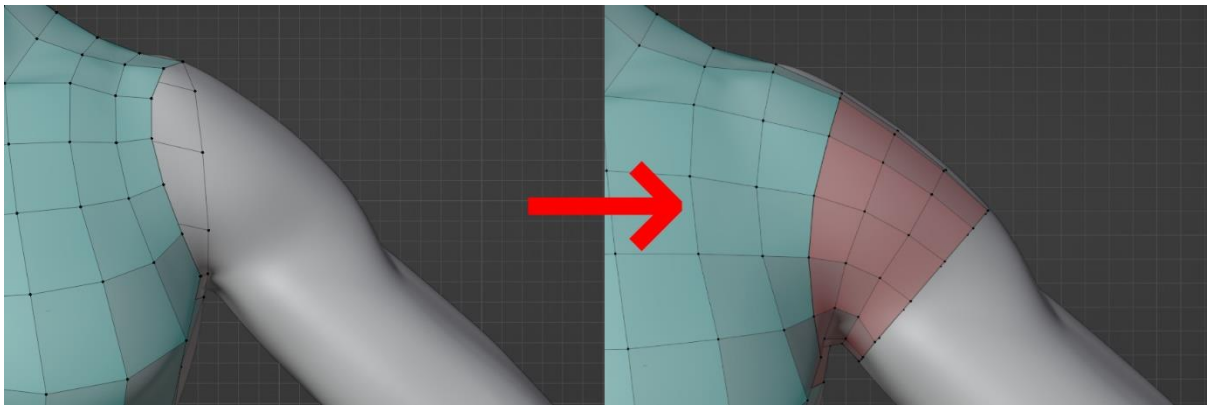


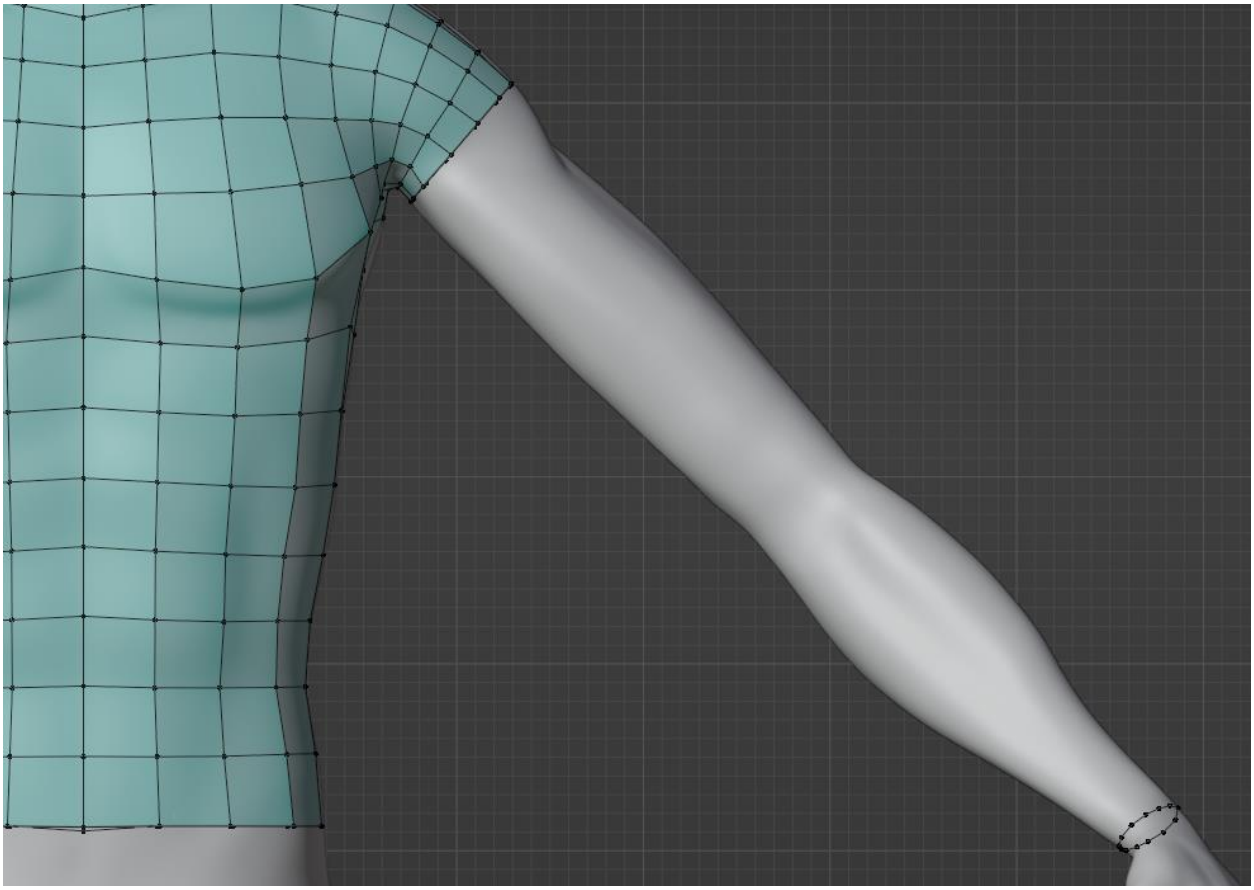


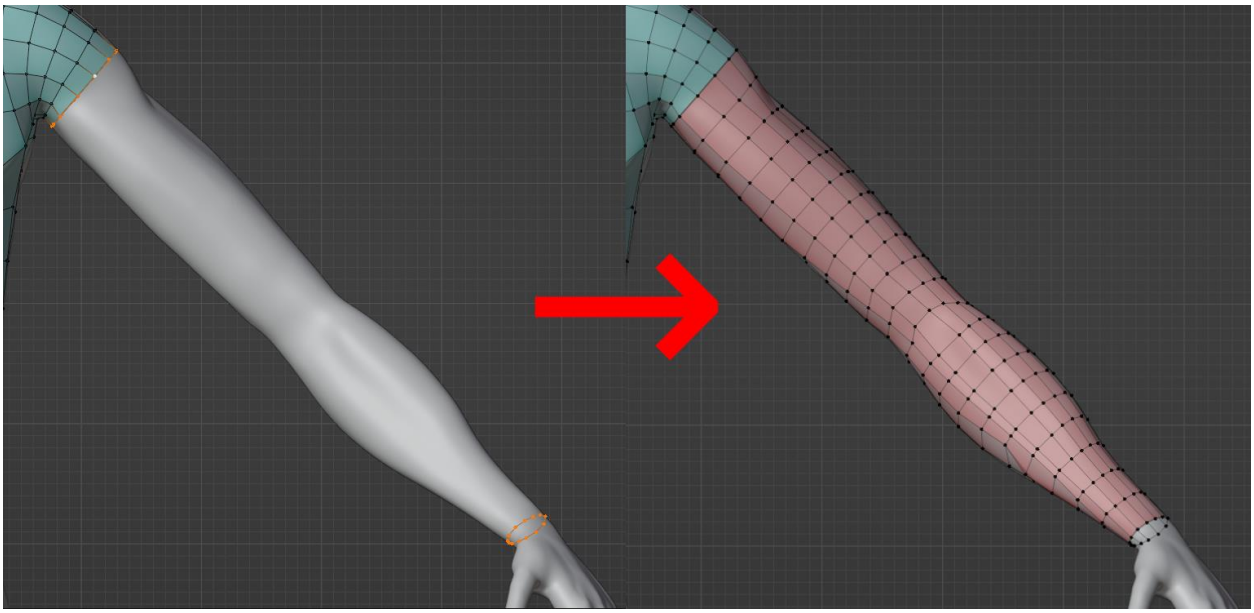


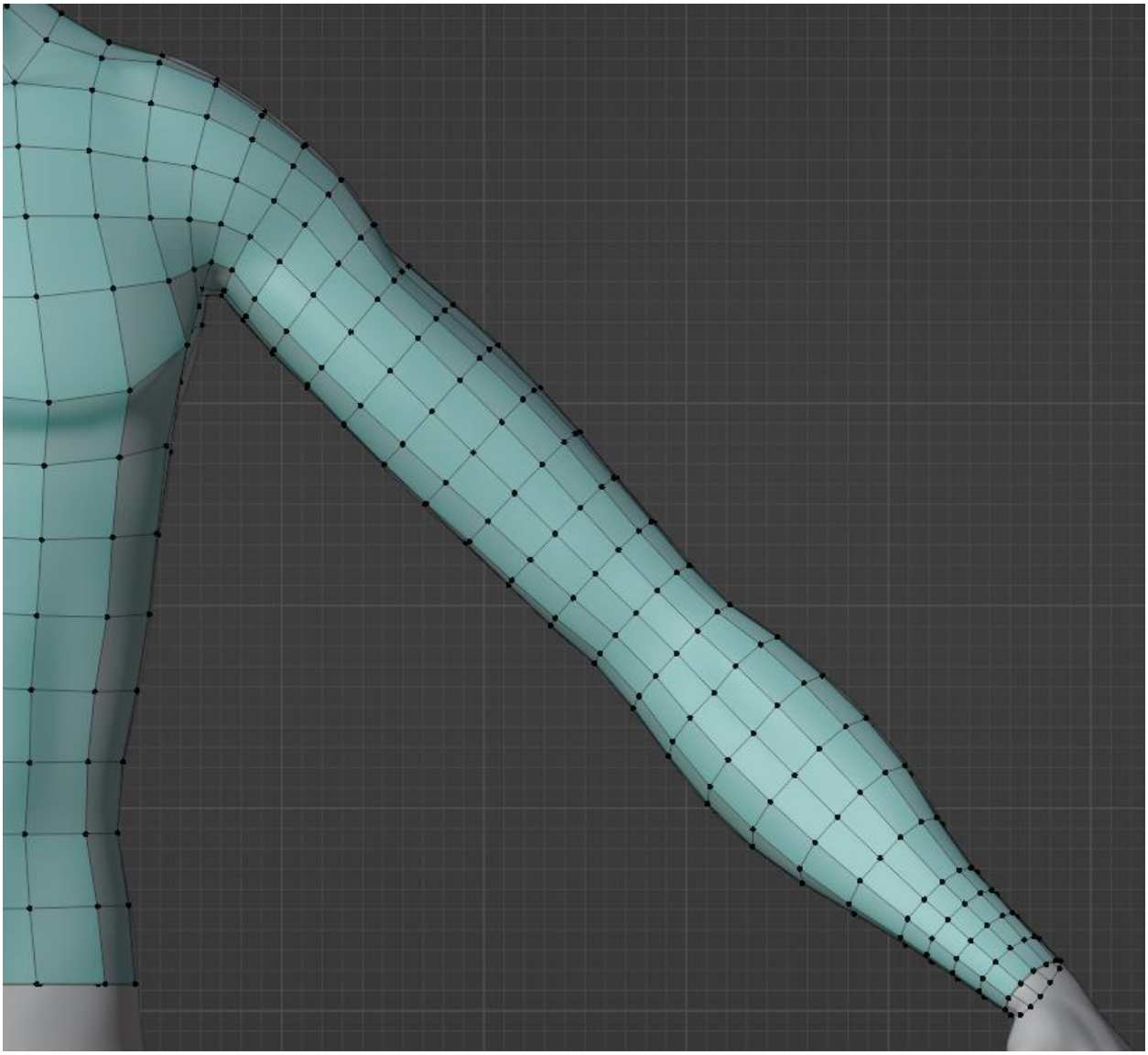


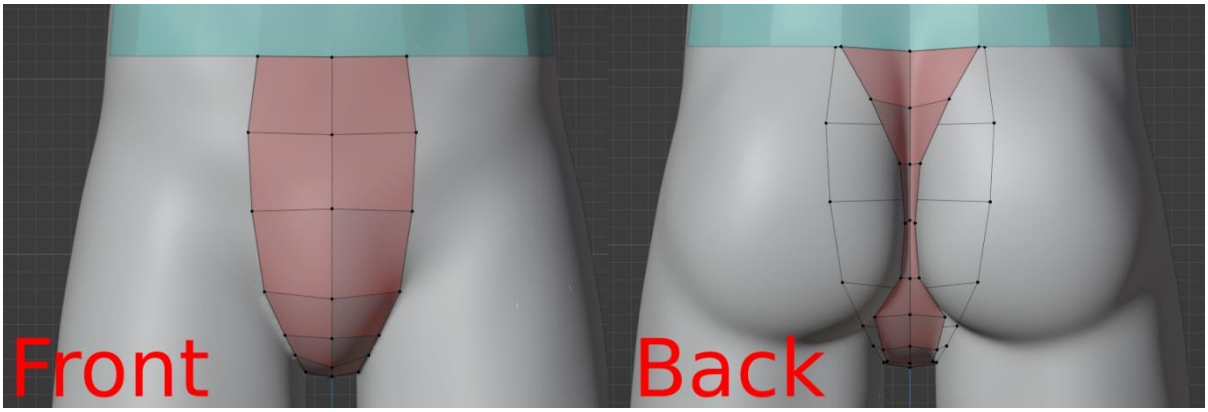

Male
Female







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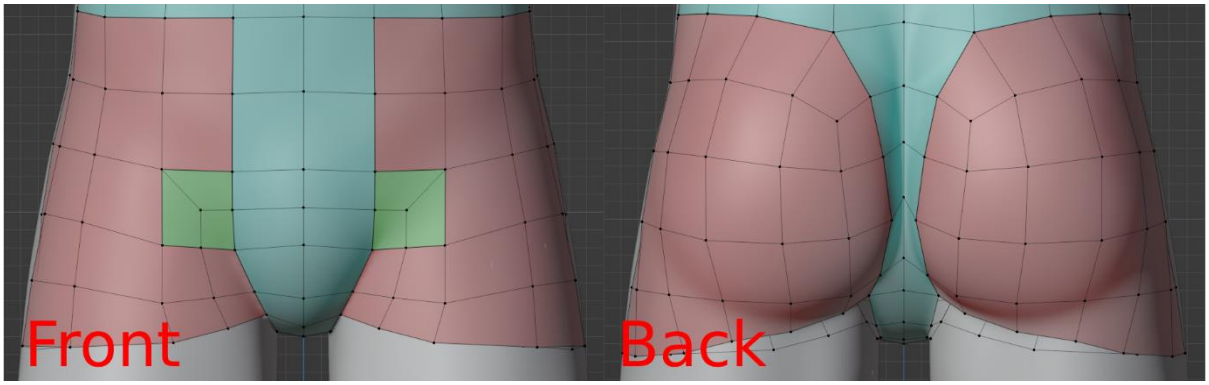
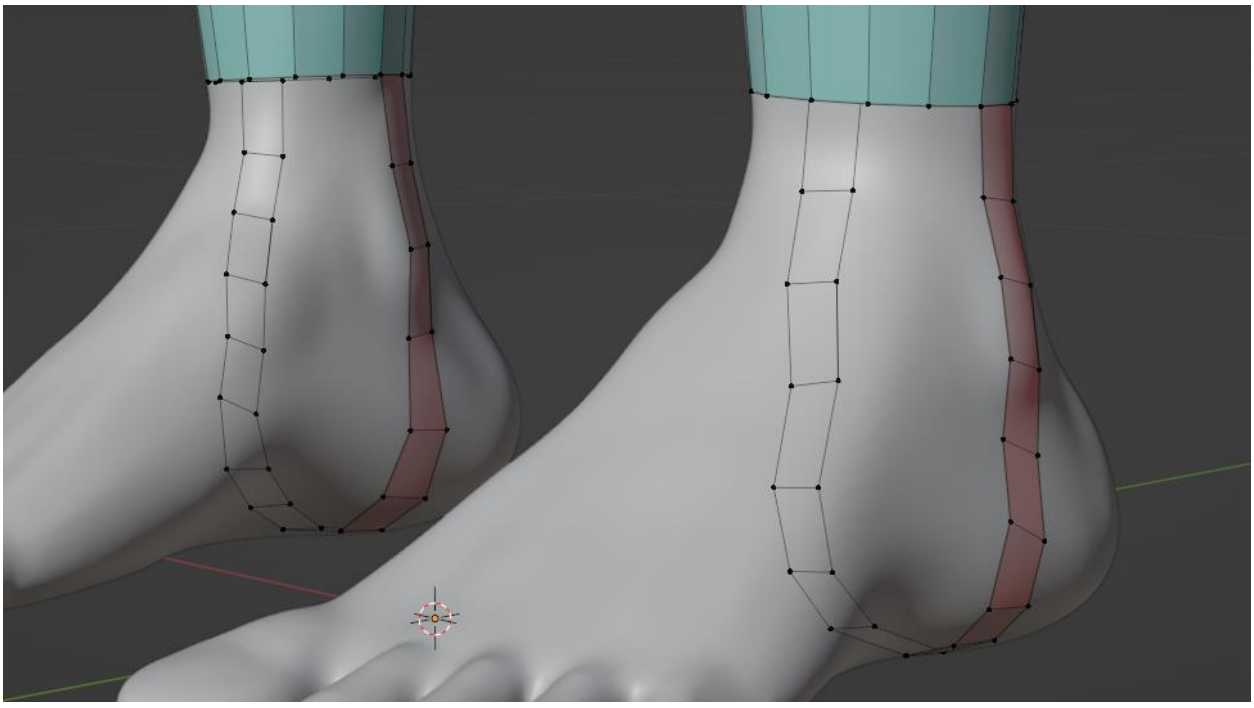
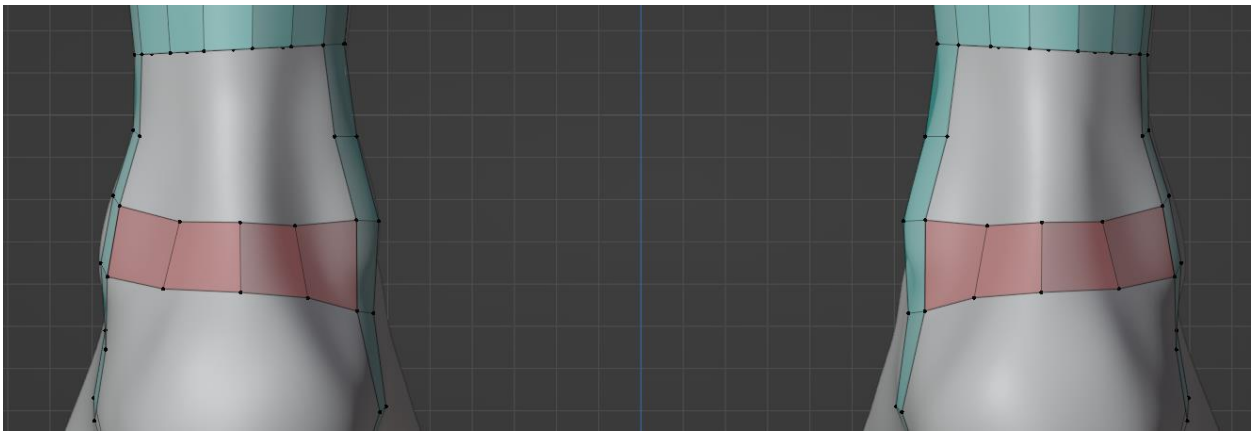
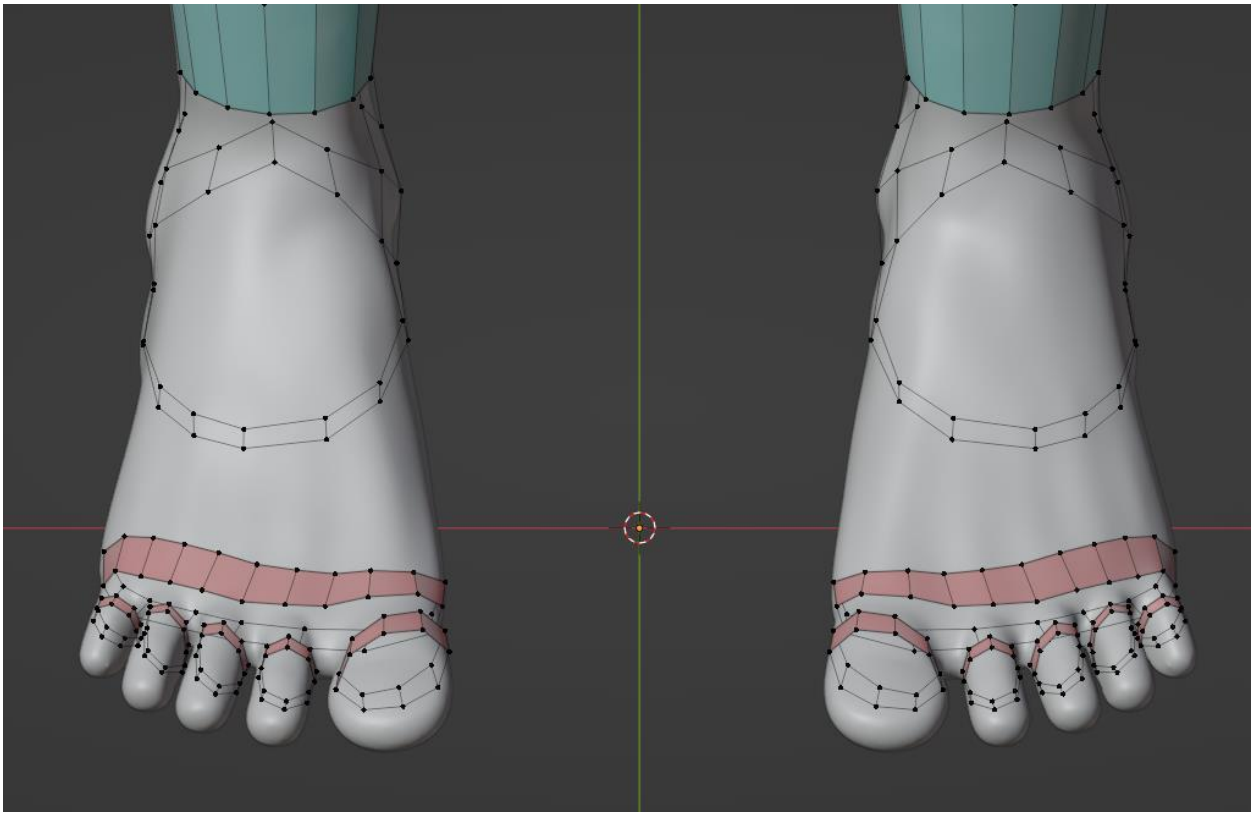
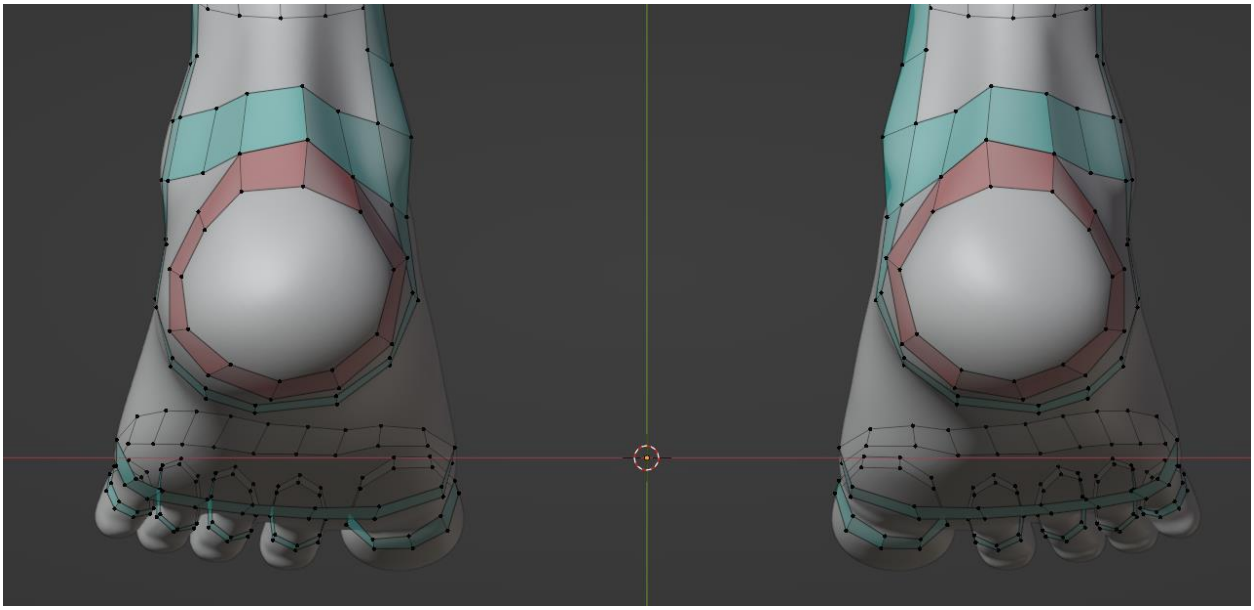

Front
Back

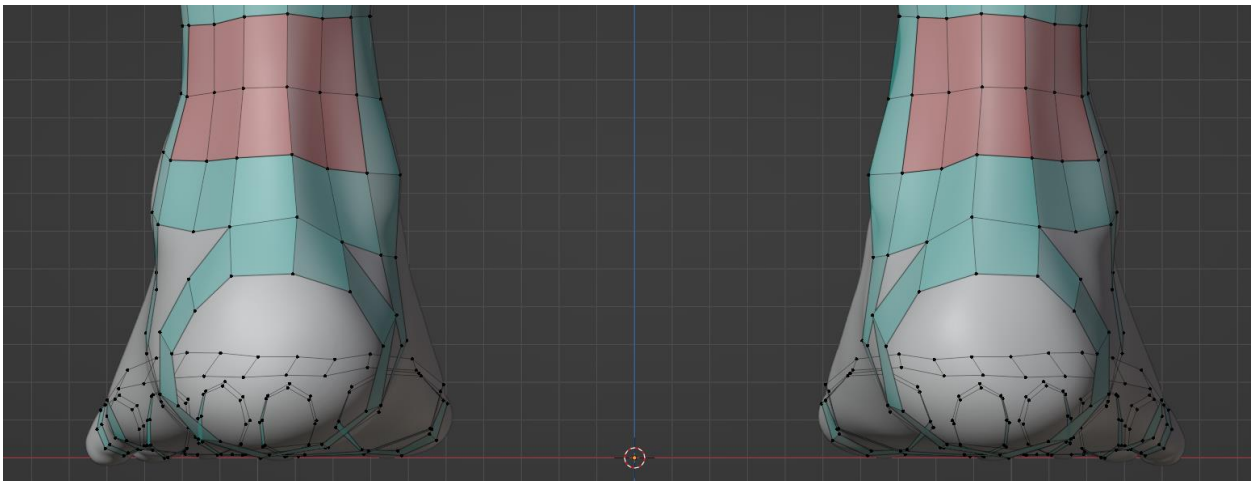
Front
Back

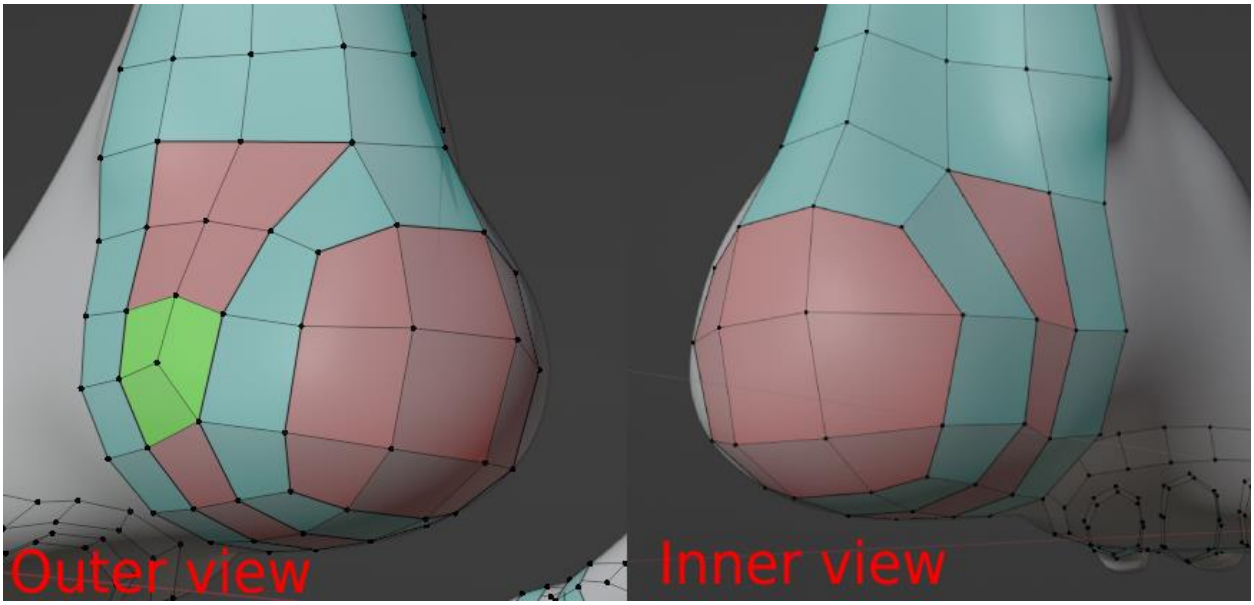


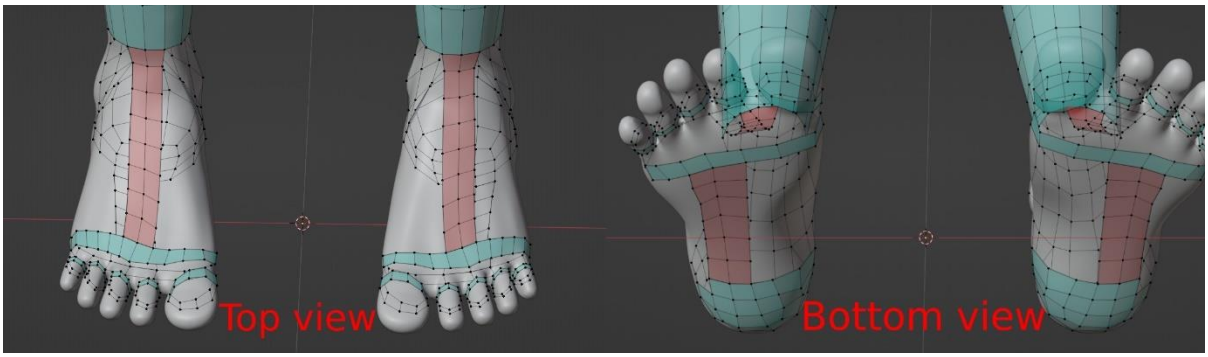


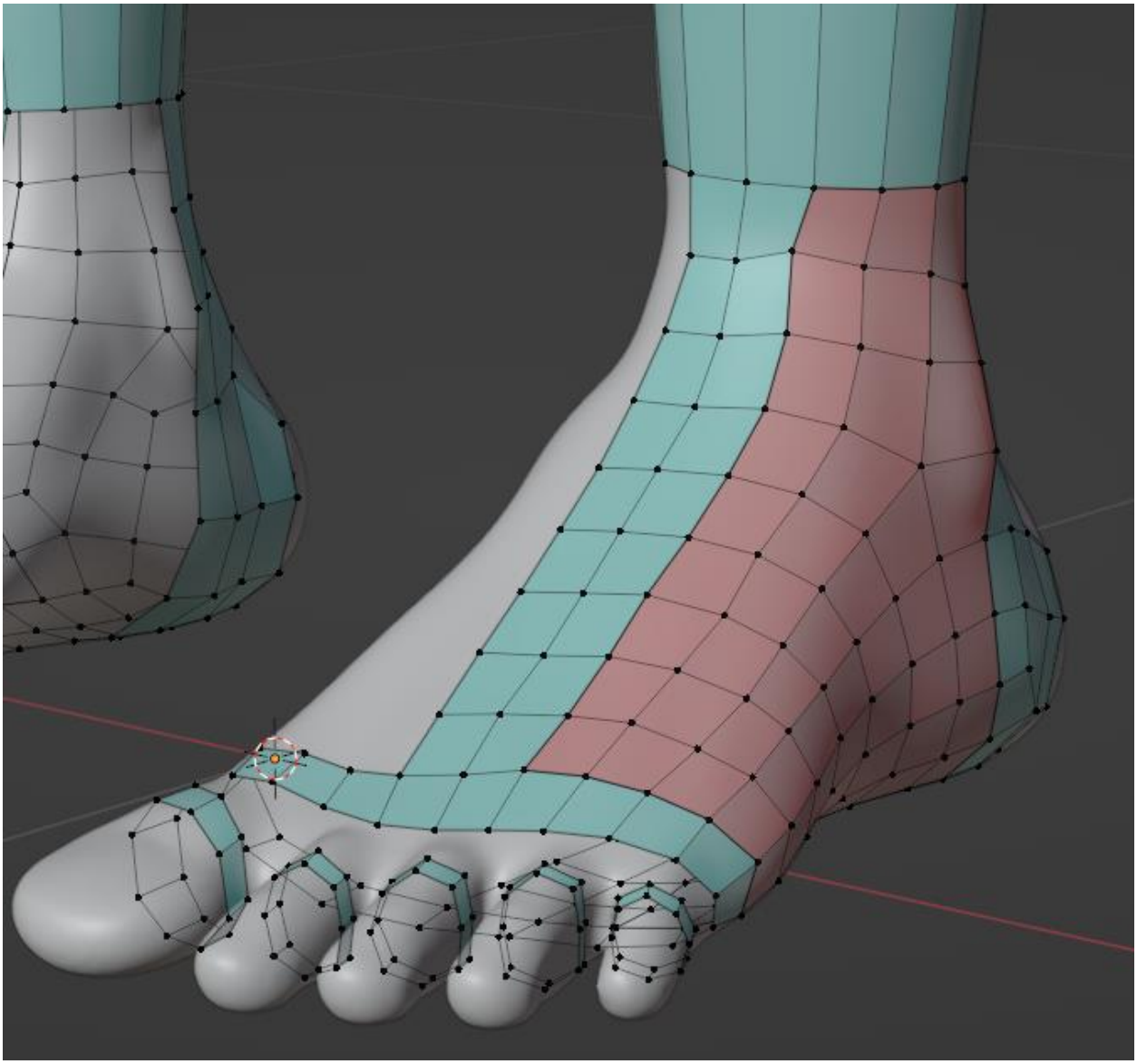


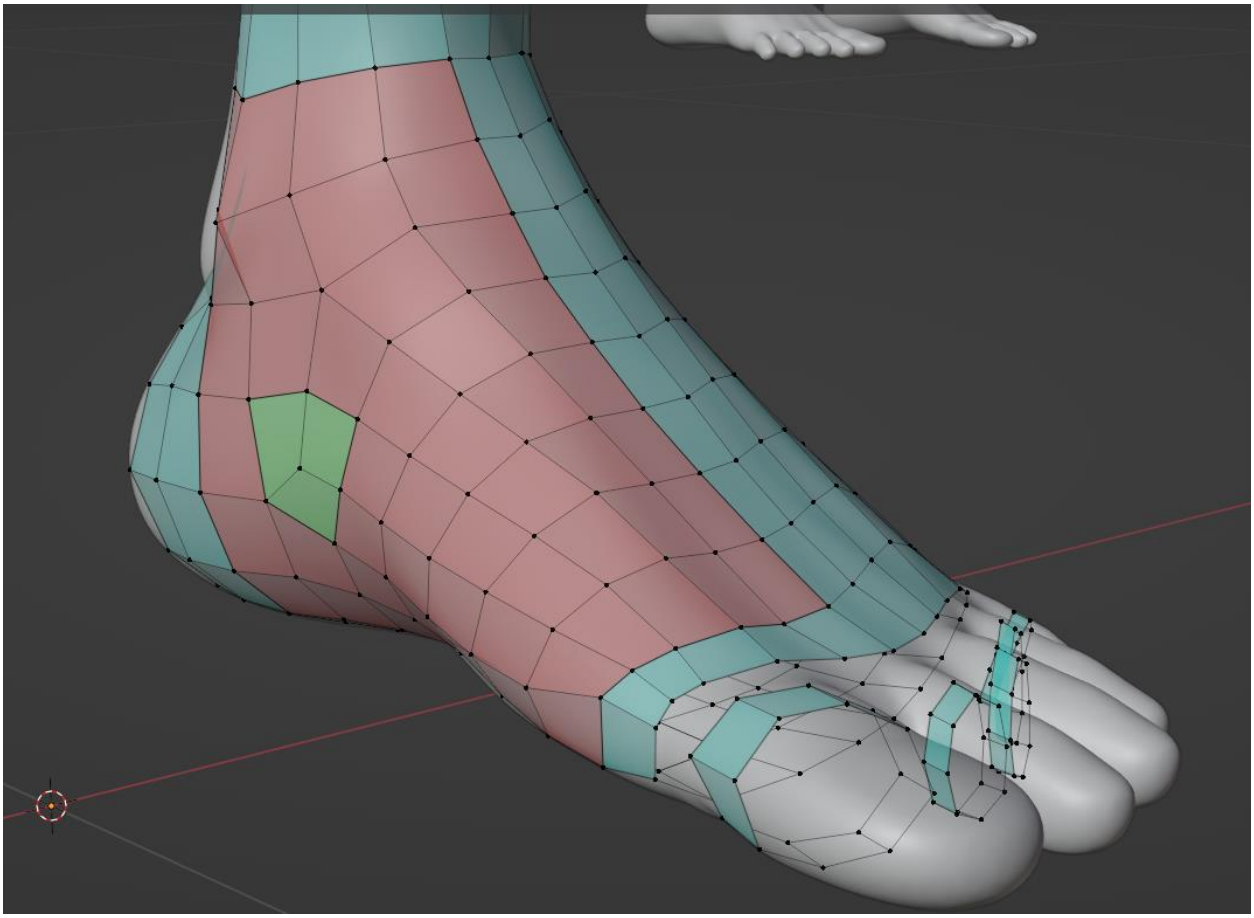


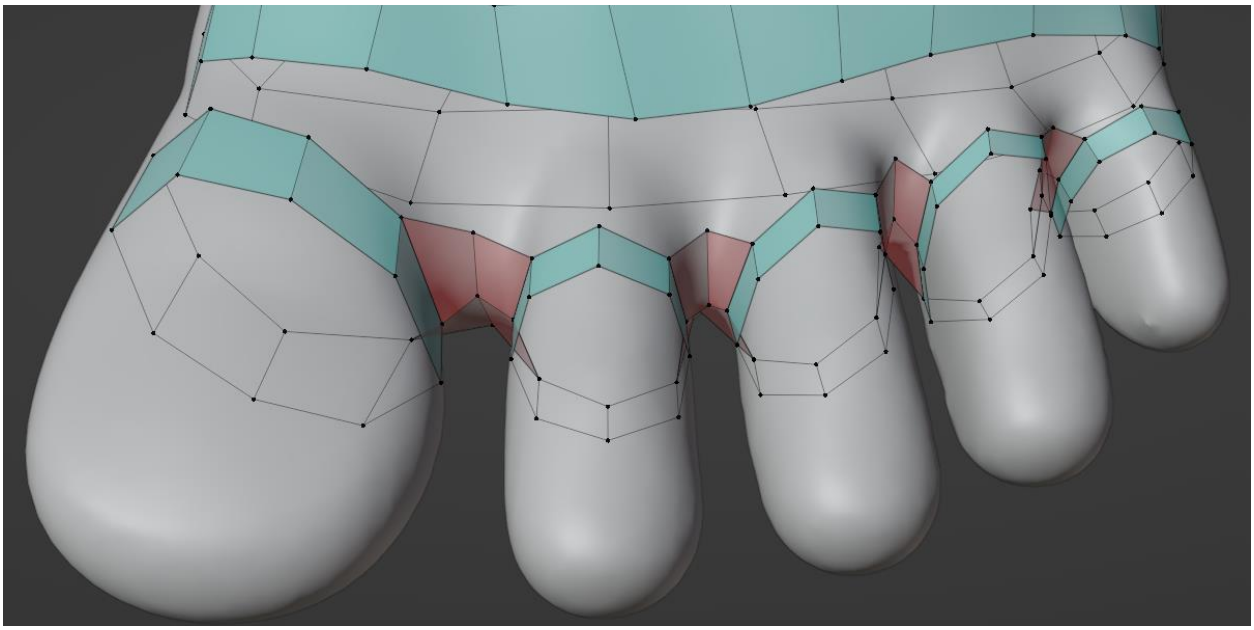


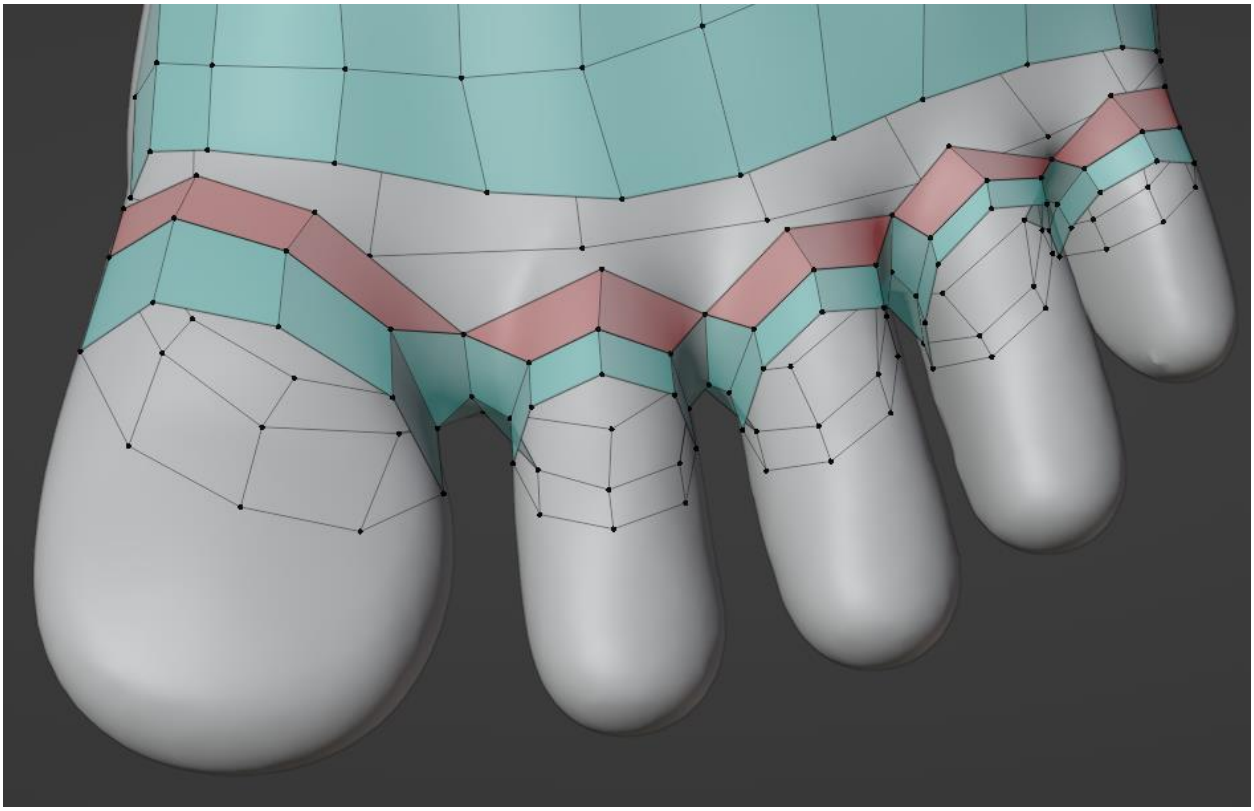

Outer view
Inner view

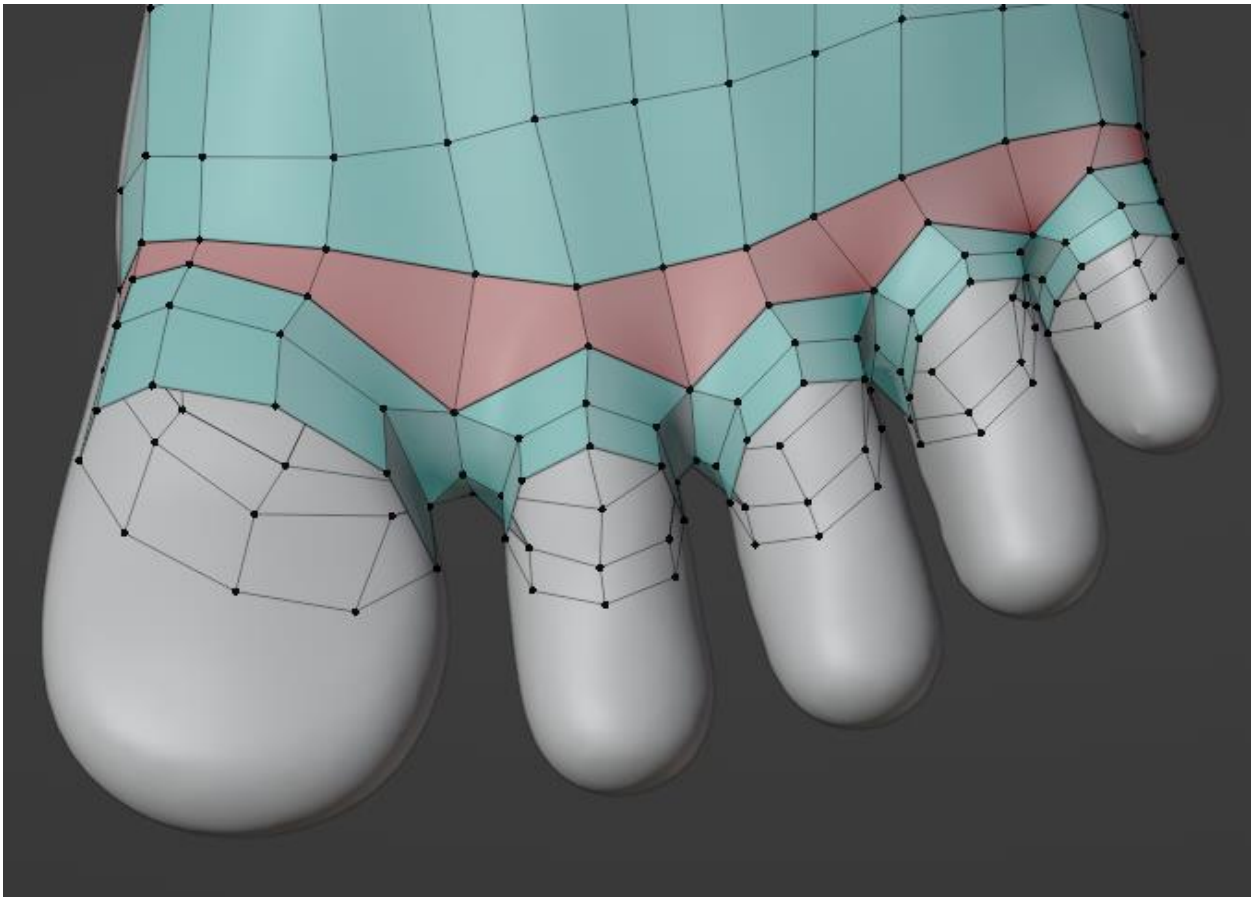

Top view
Bottom view

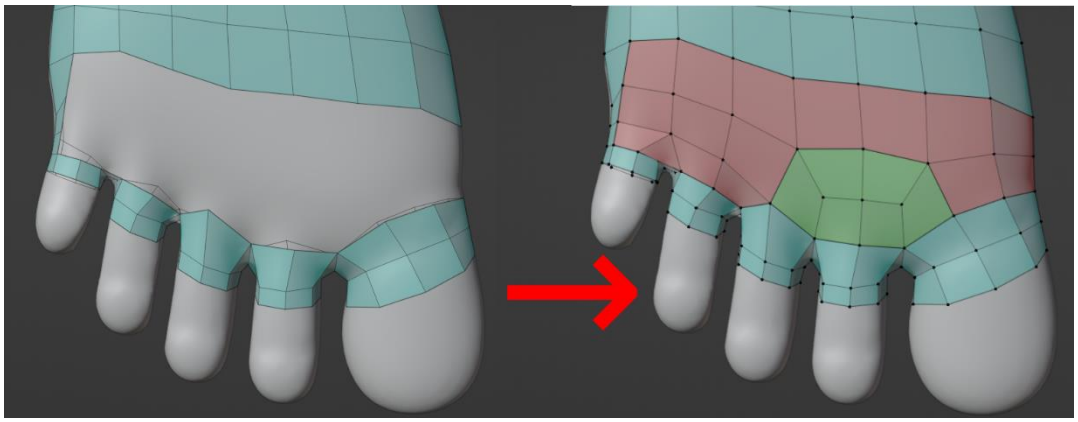


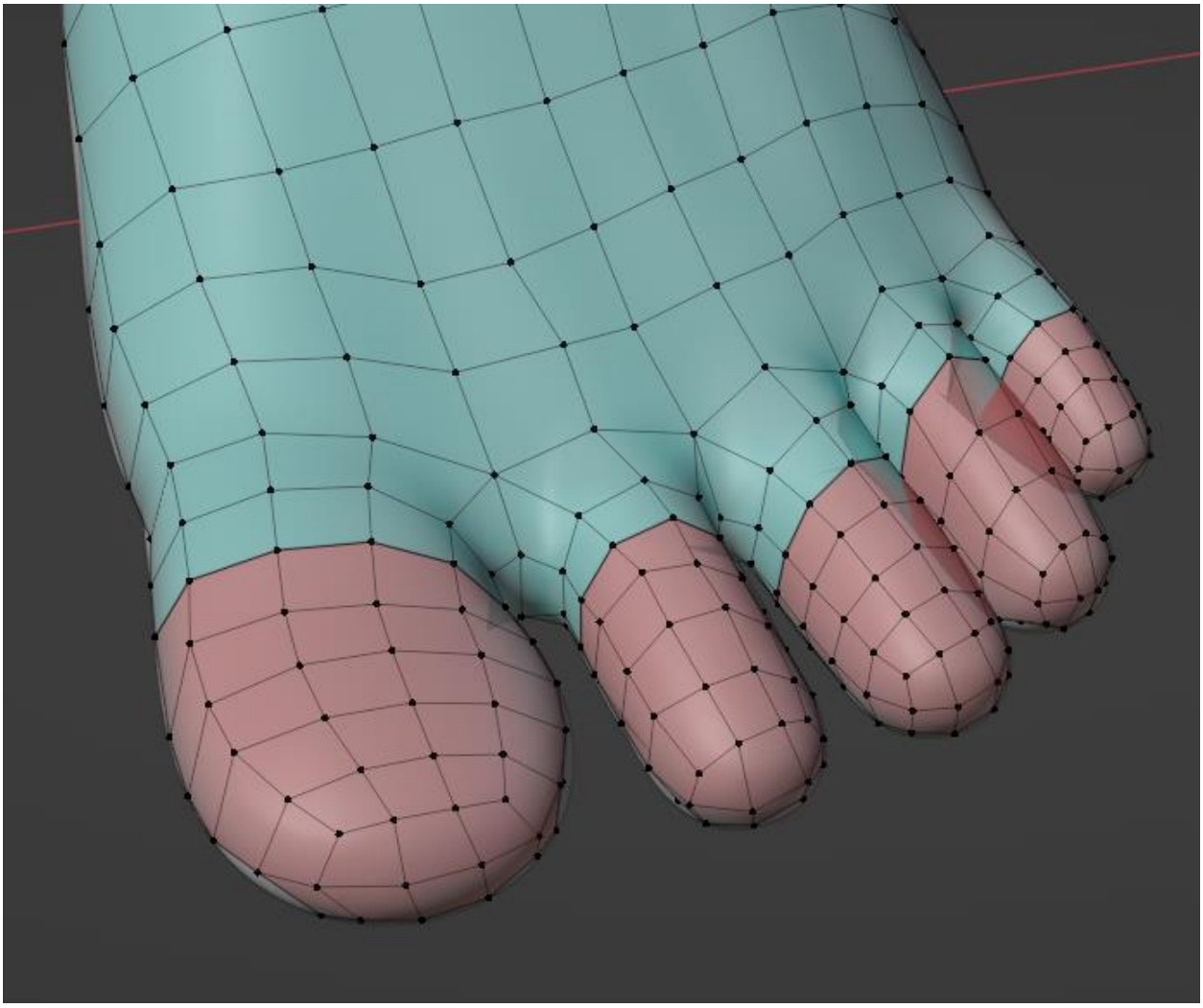


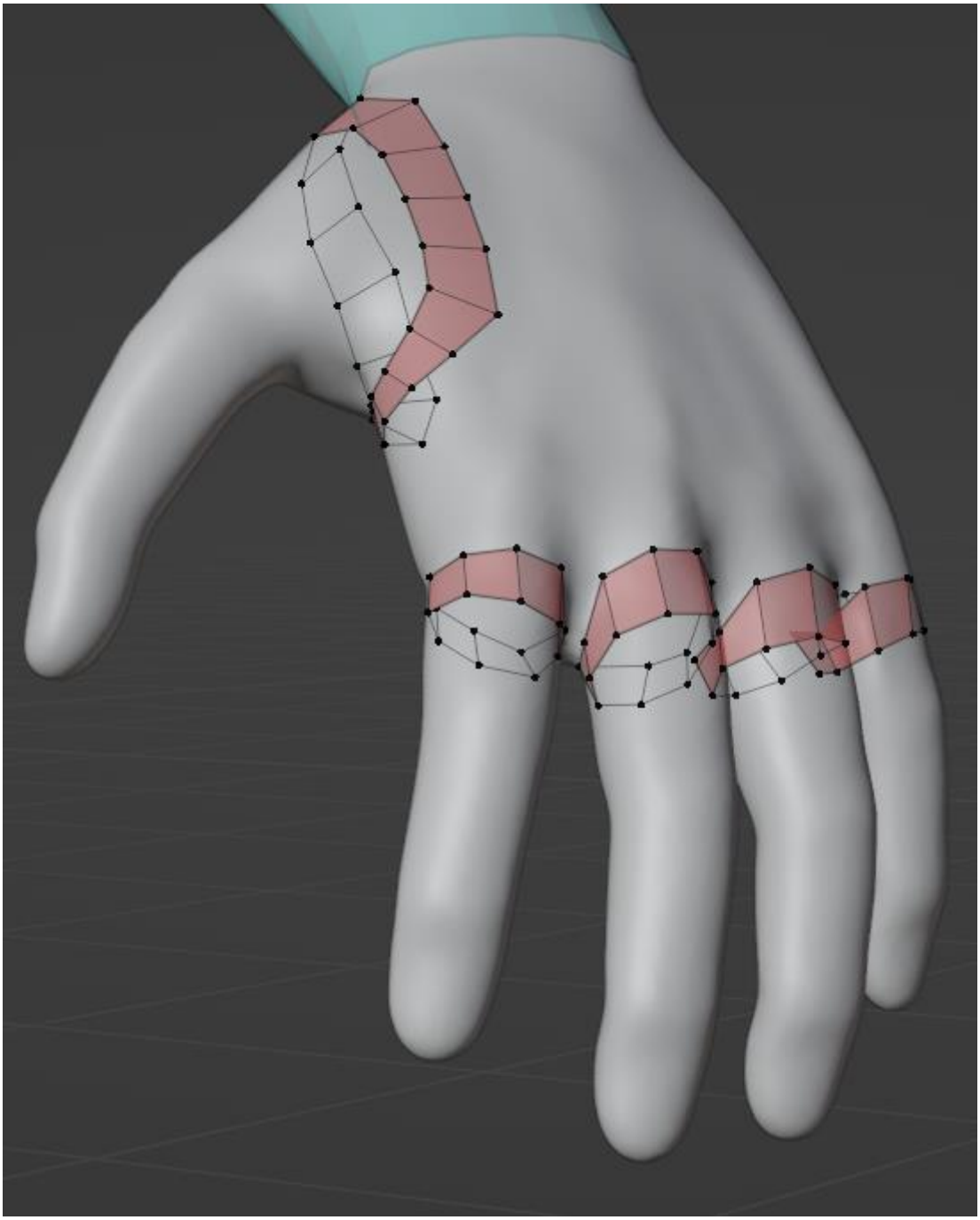


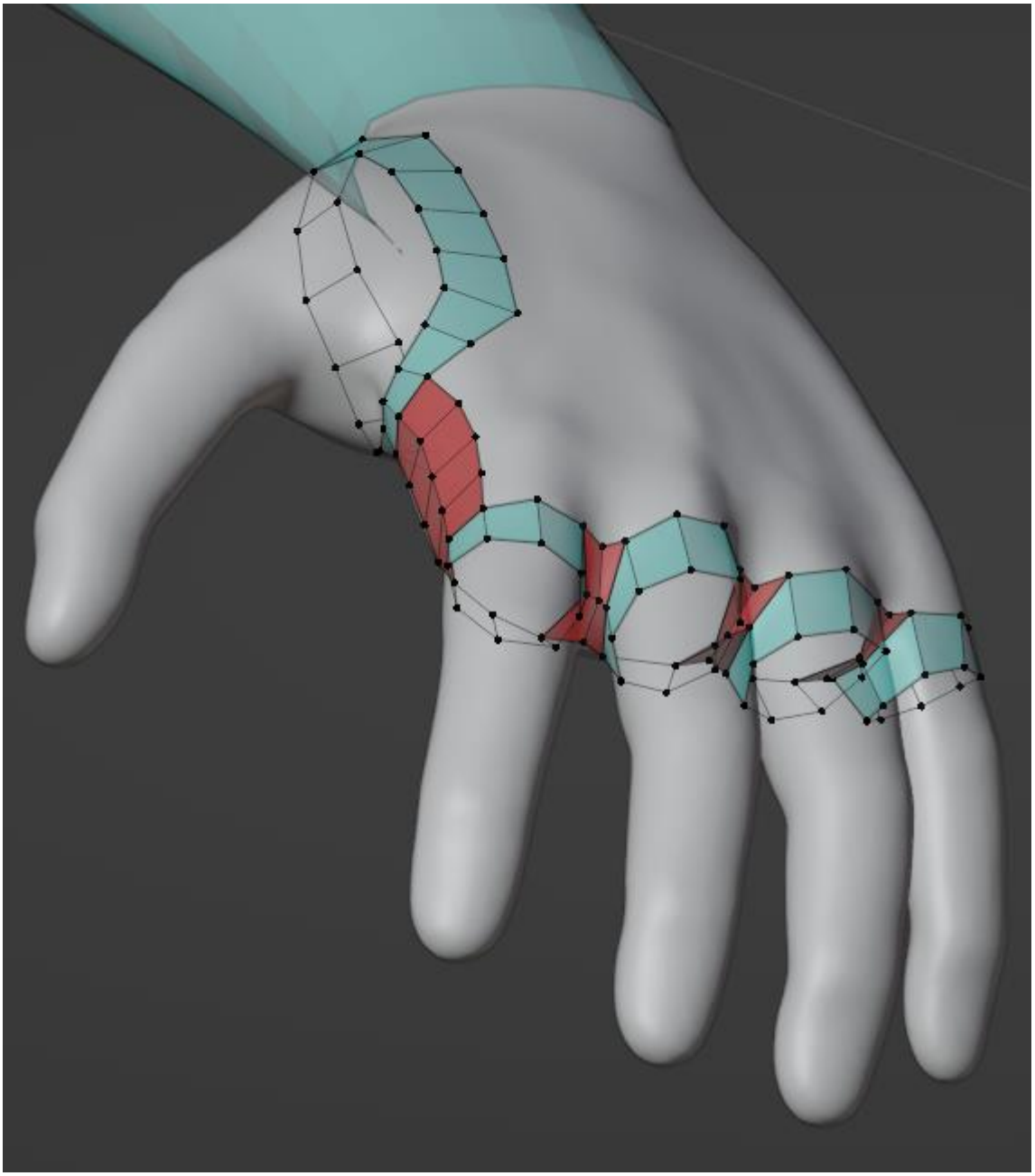


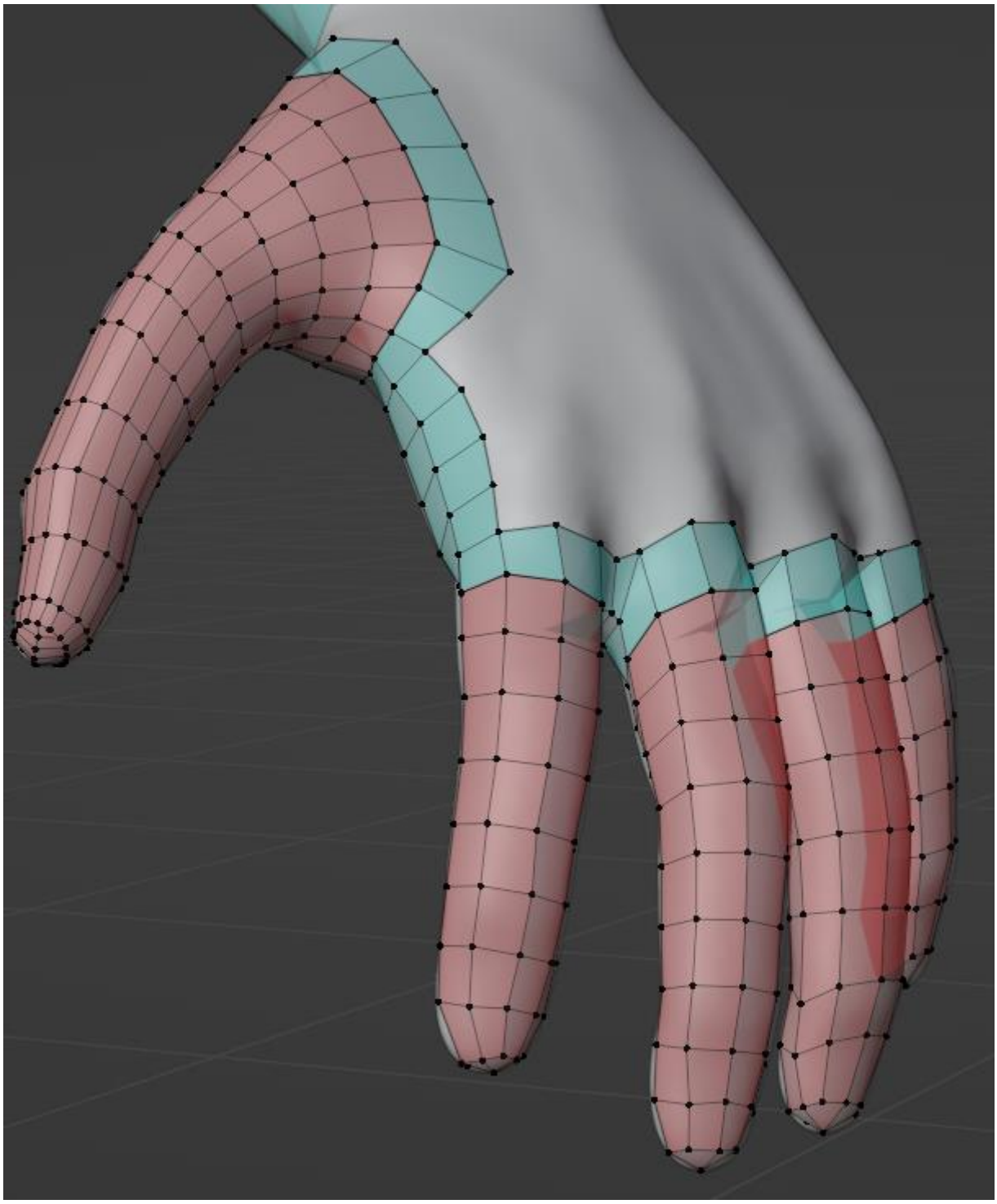


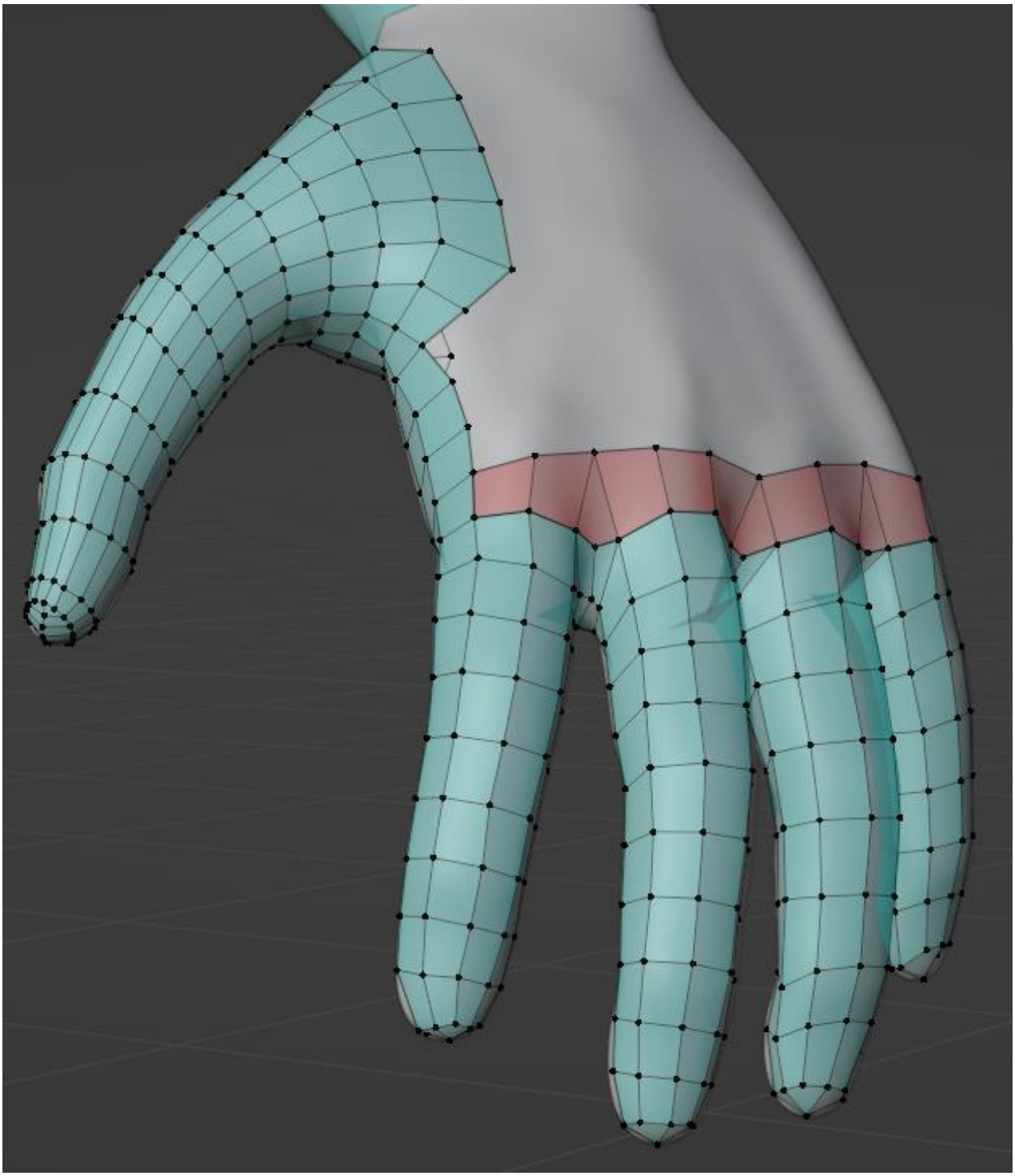


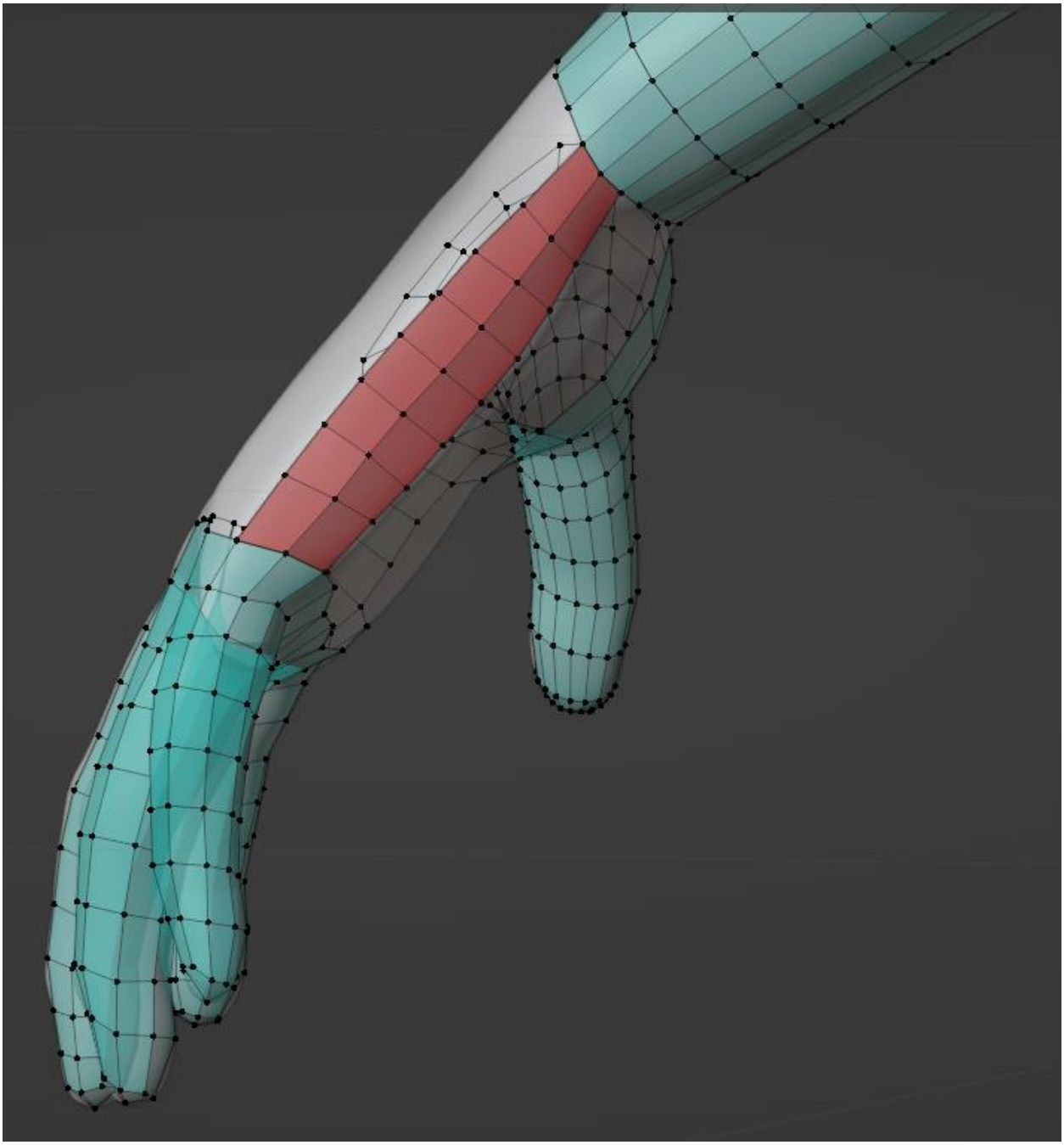


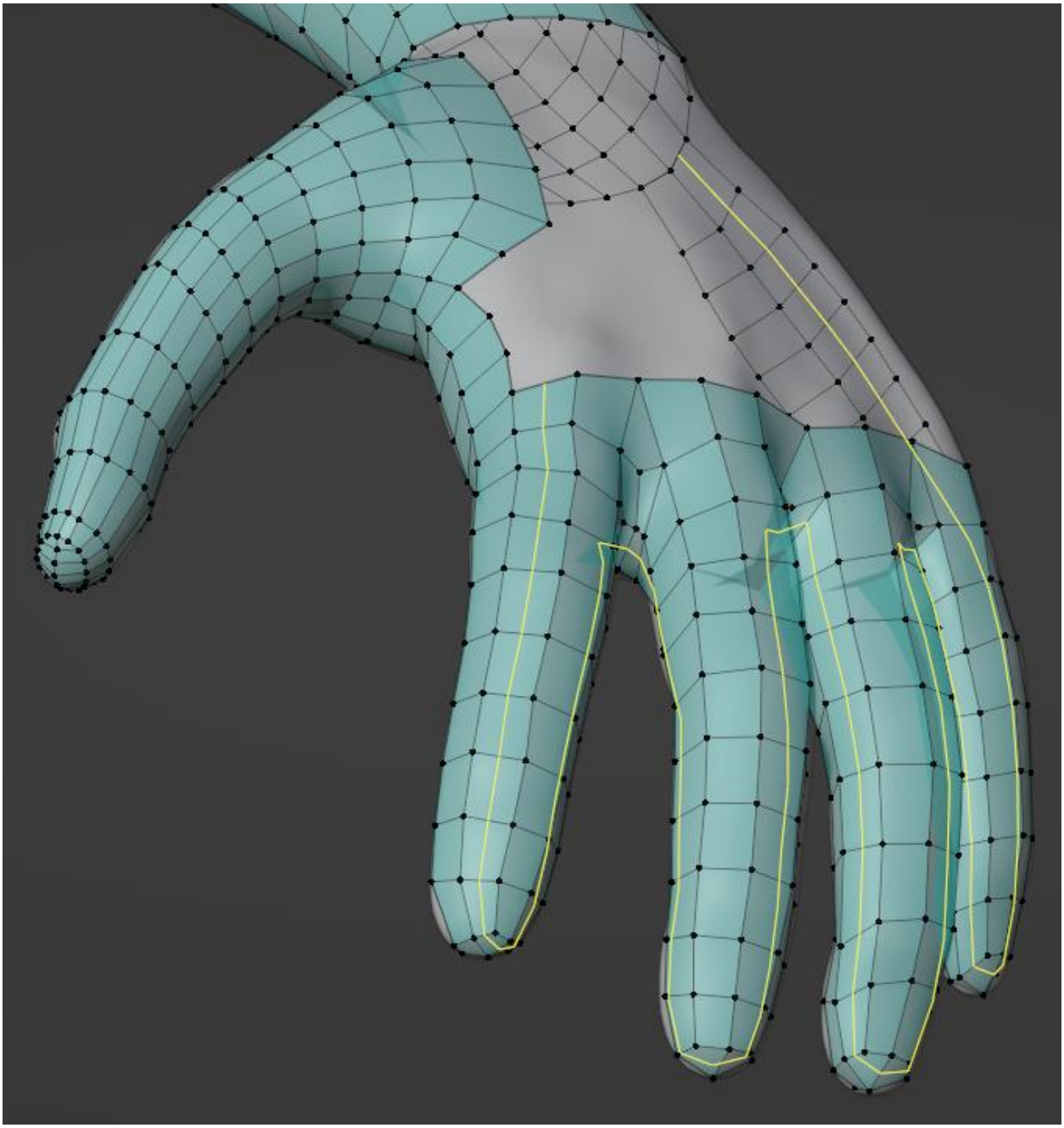


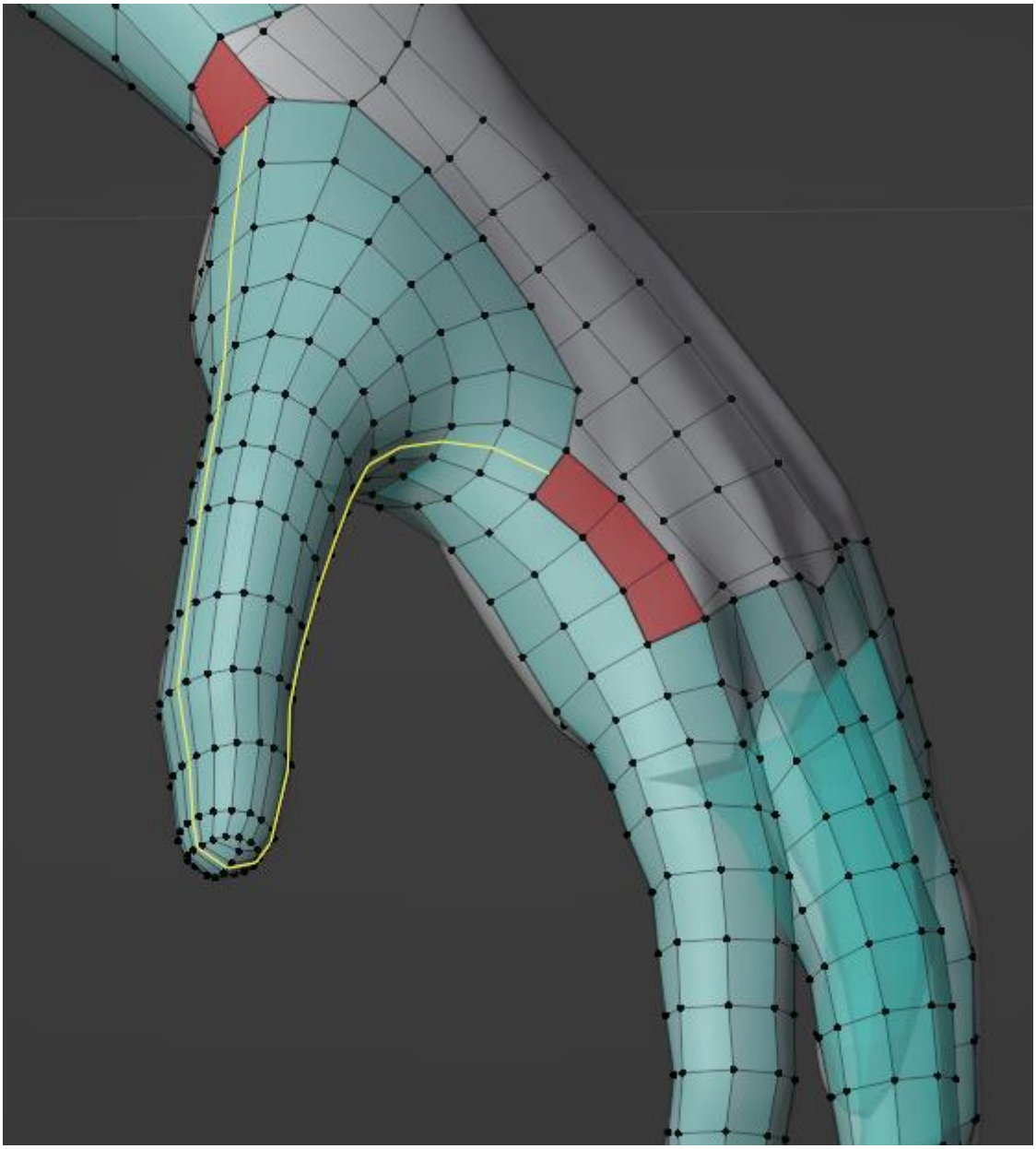


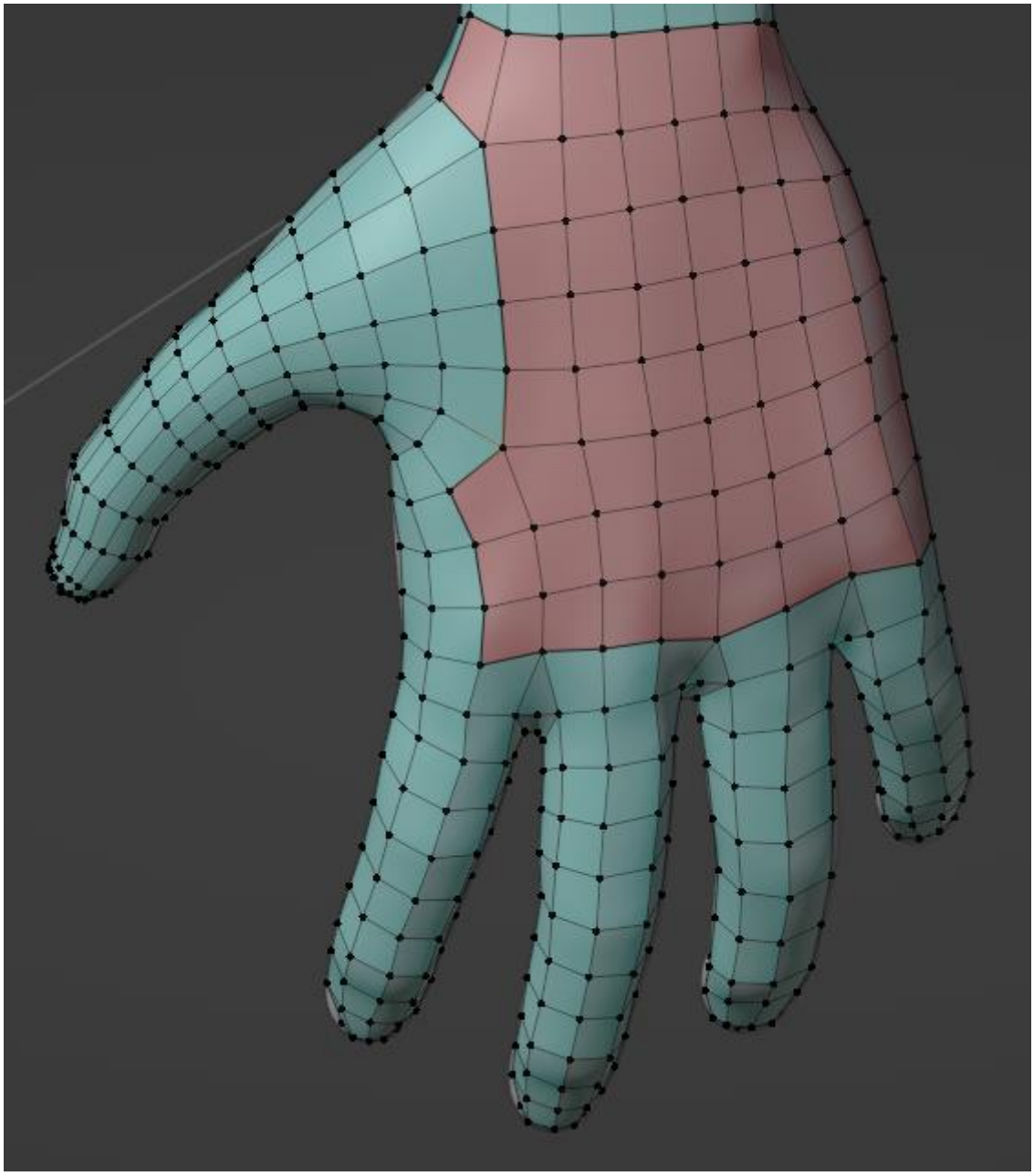


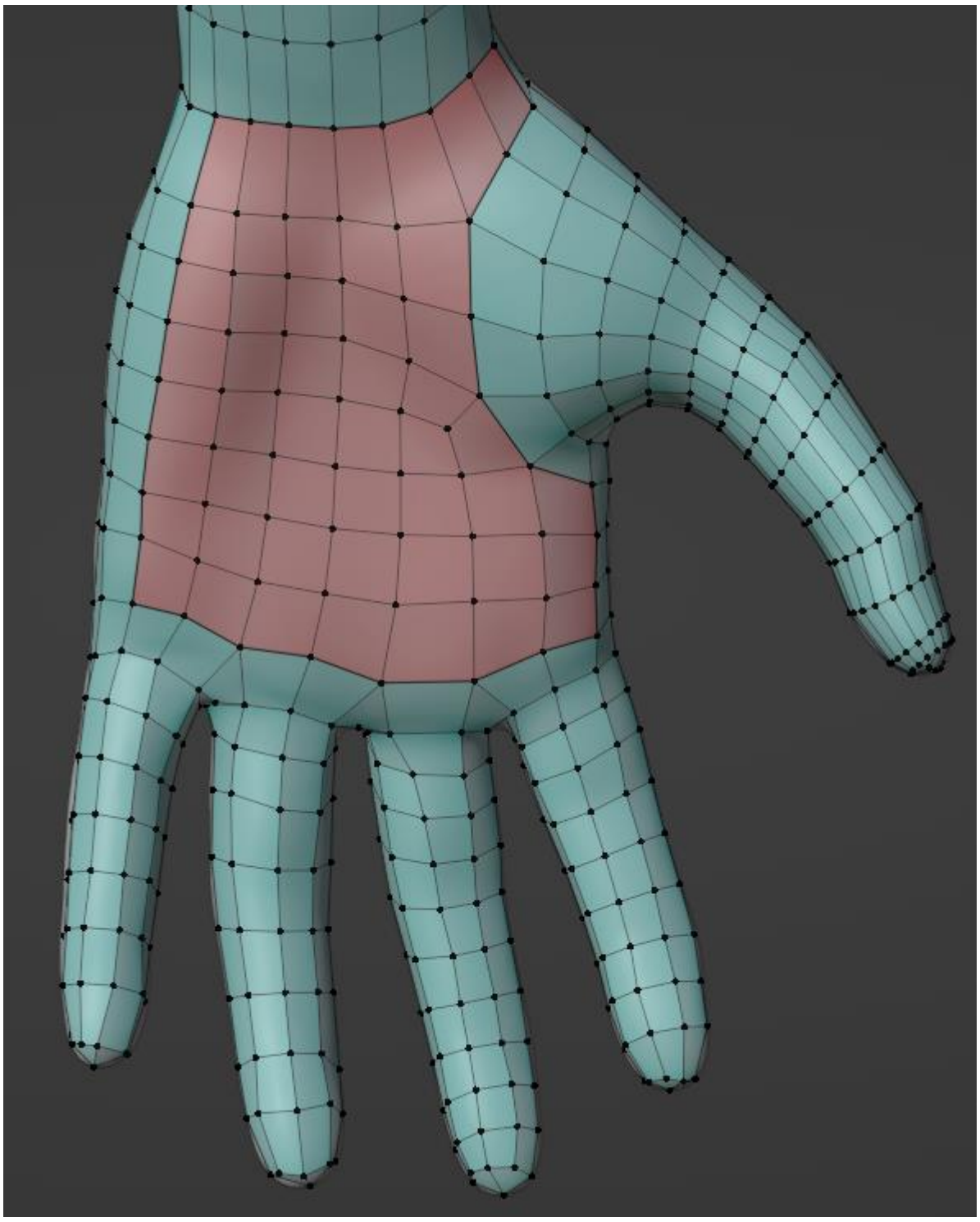


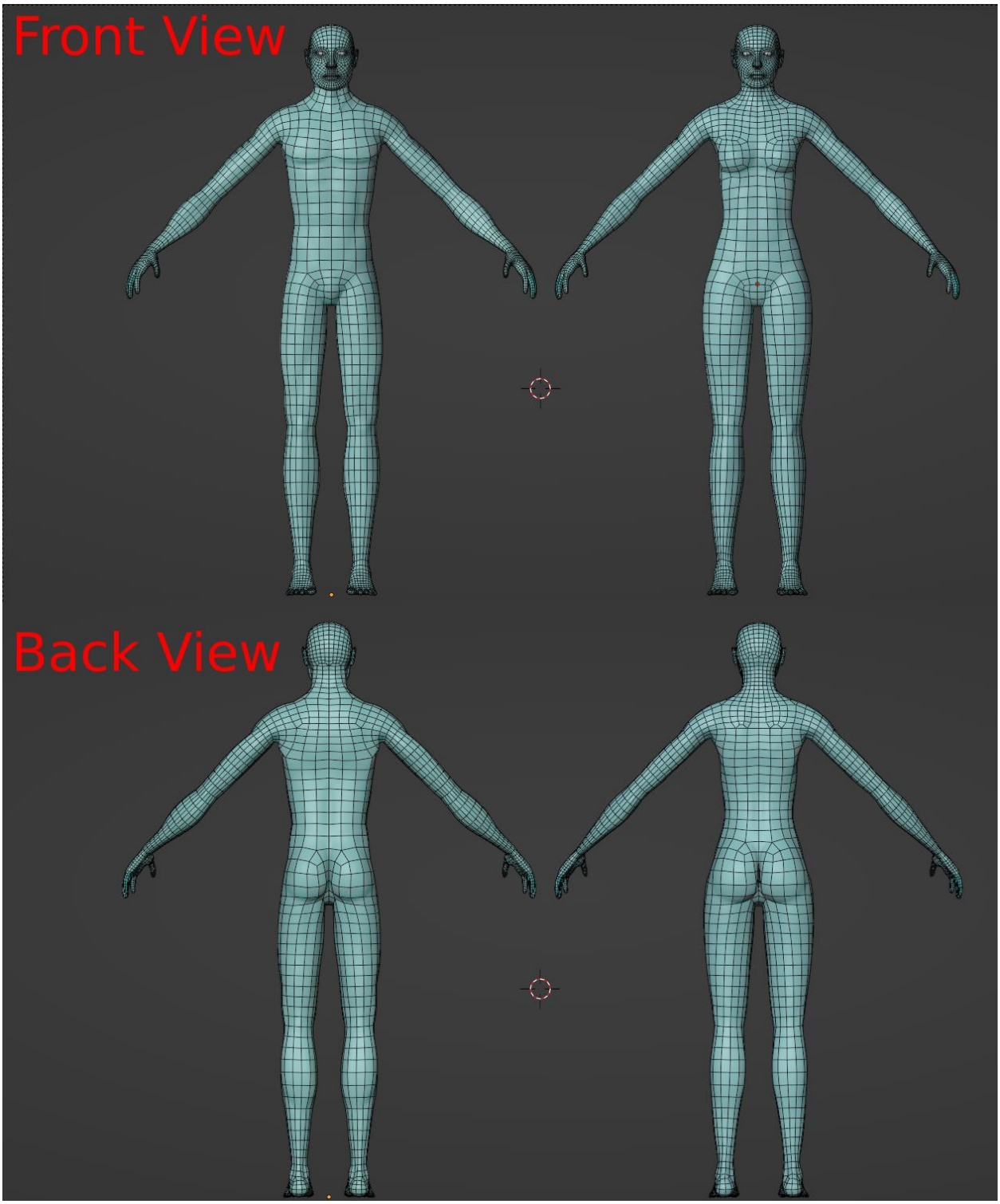


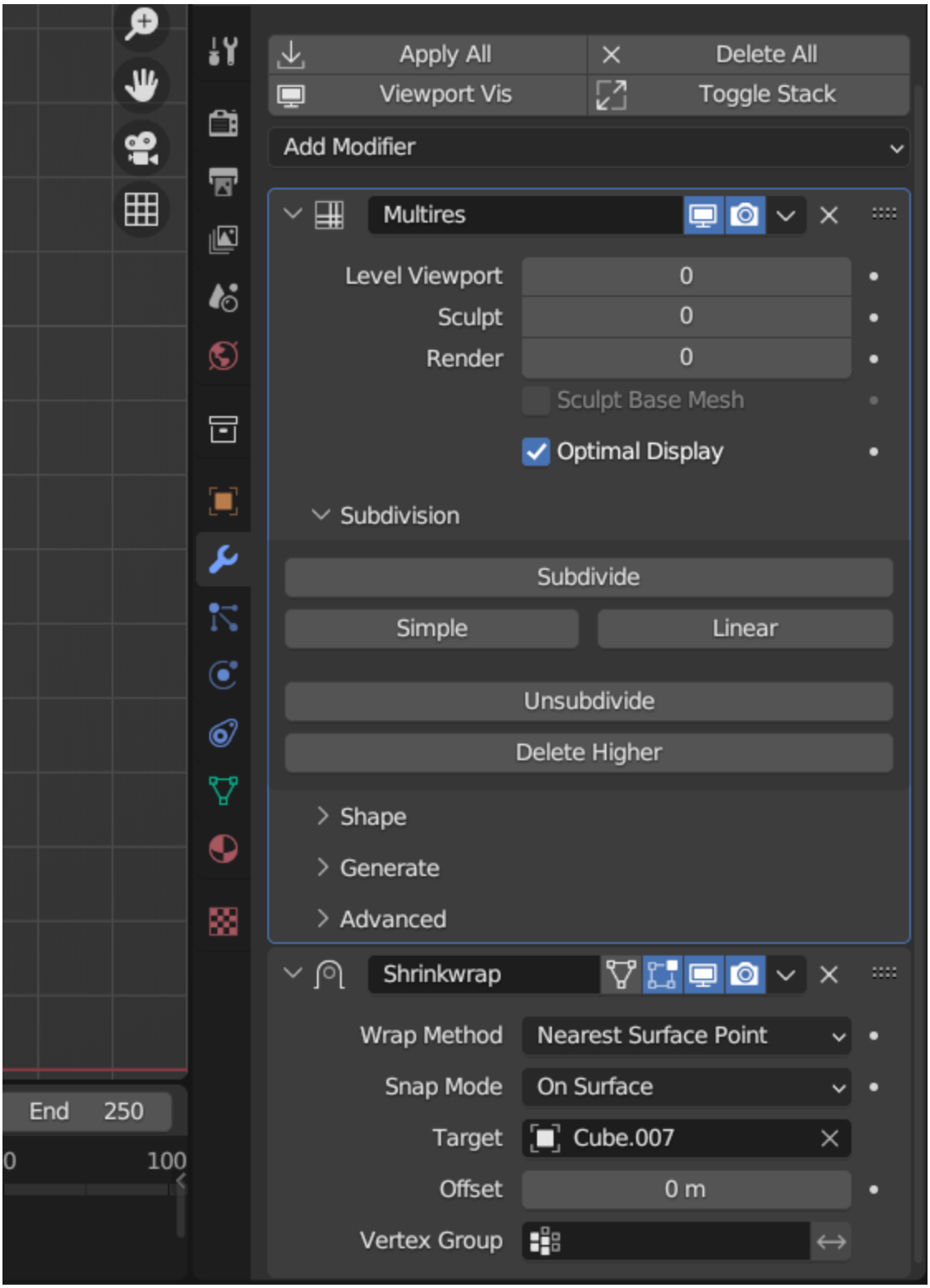









Front View
Back View


Apply All
Delete All
Viewport Vis
Toggle Stack
Add Modifier
Multires
Level Viewport
0
Sculpt
0
Render
0
Sculpt Base Mesh
Optimal Display
Subdivision
Subdivide
Simple
Linear
Unsubdivide
Delete Higher
Shape
Generate
Advanced
Shrinkwrap
Wrap Method
Nearest Surface Point
Snap Mode
On Surface
Target
Cube.007
Offset
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Vertex Group
End
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0
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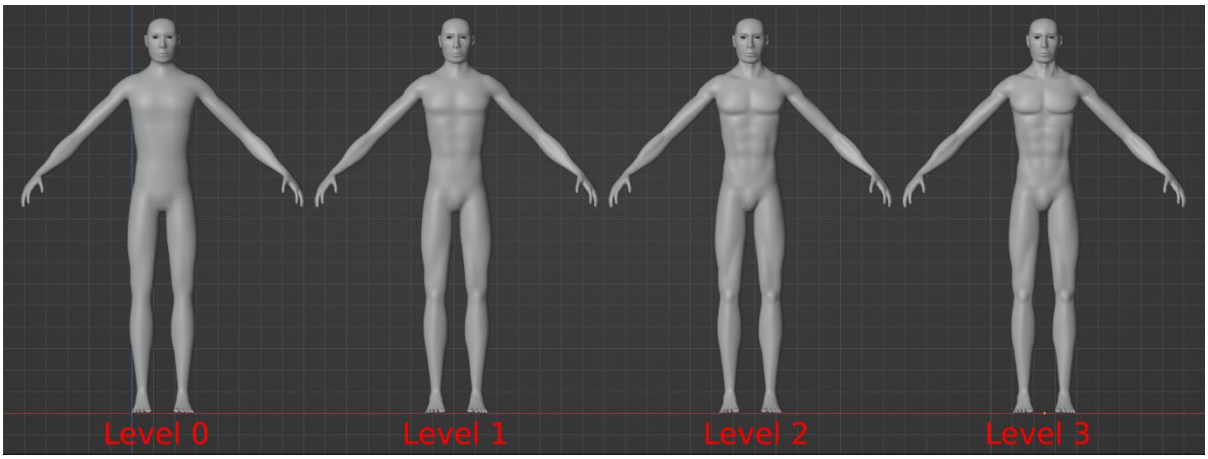
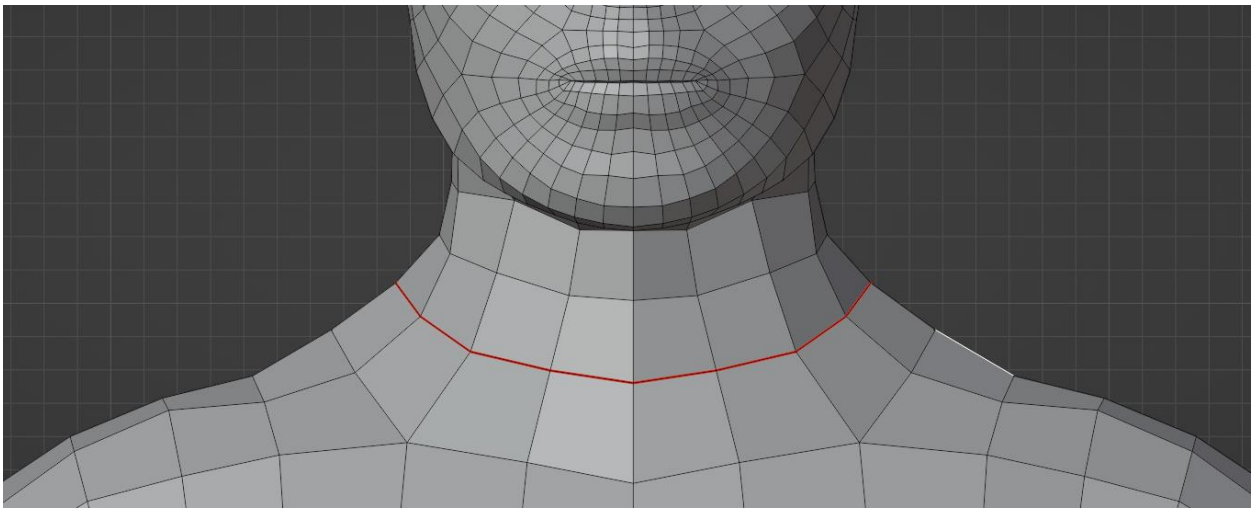
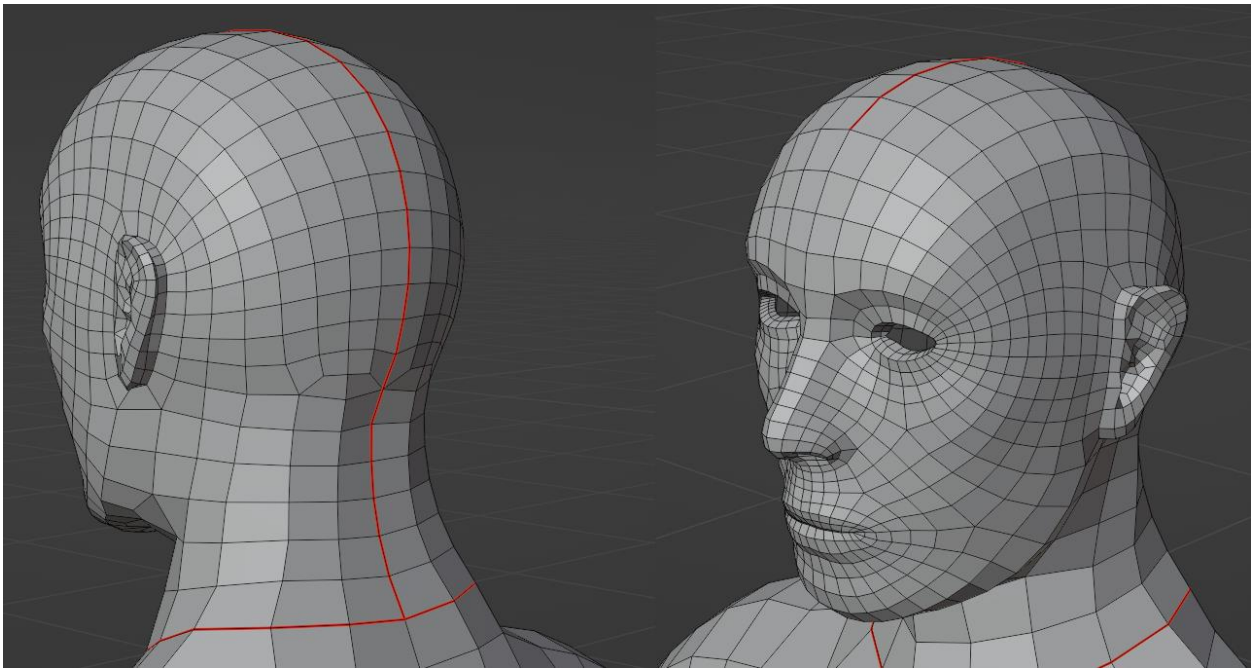
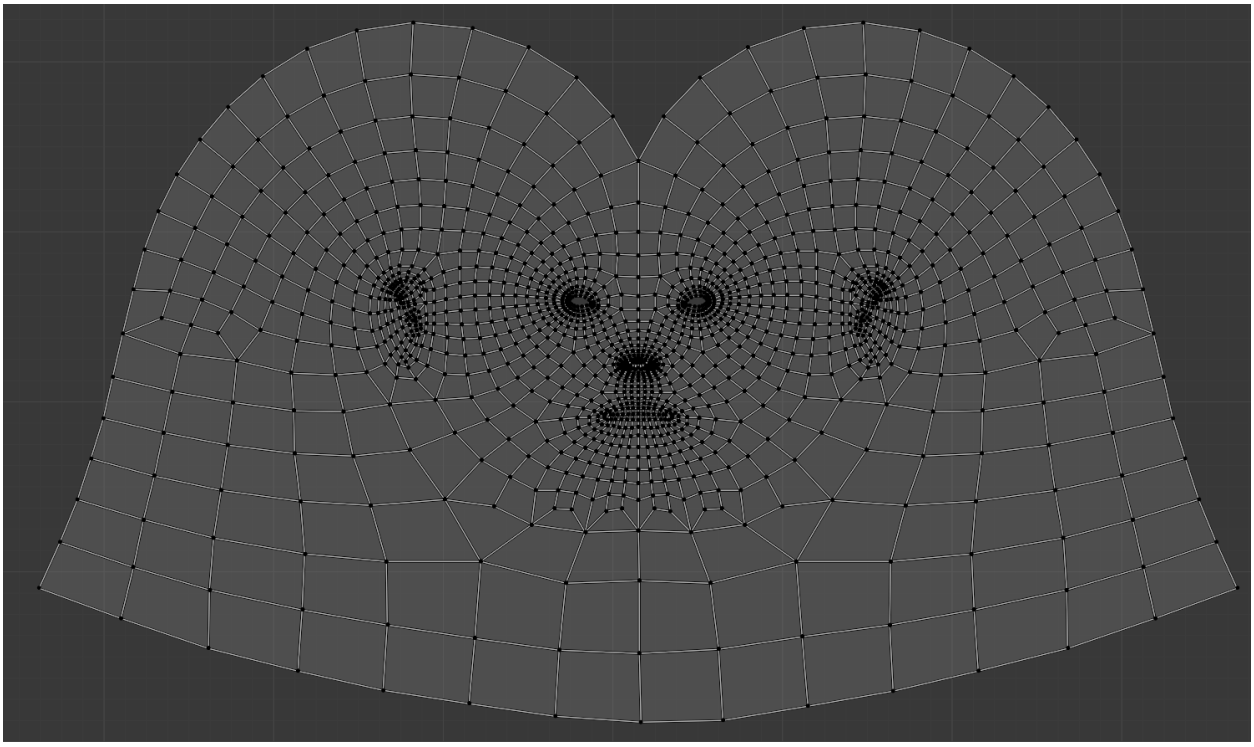
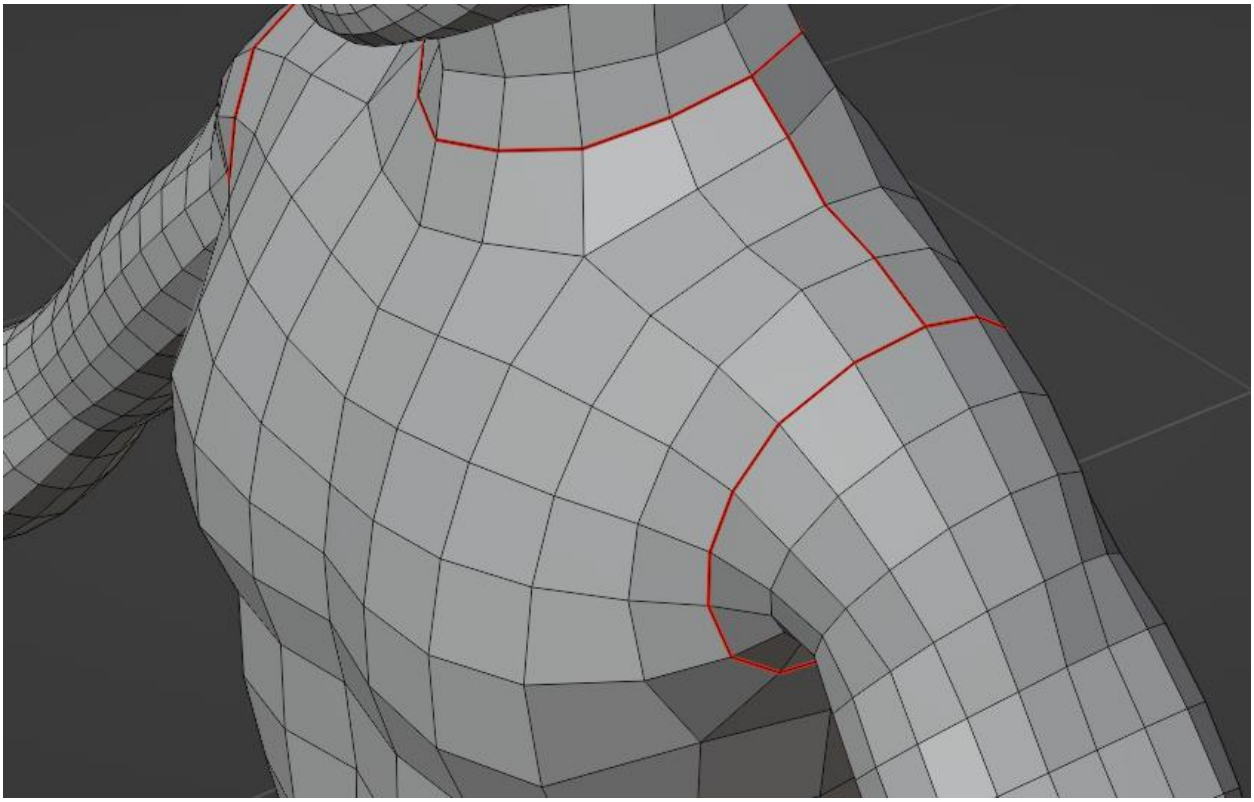
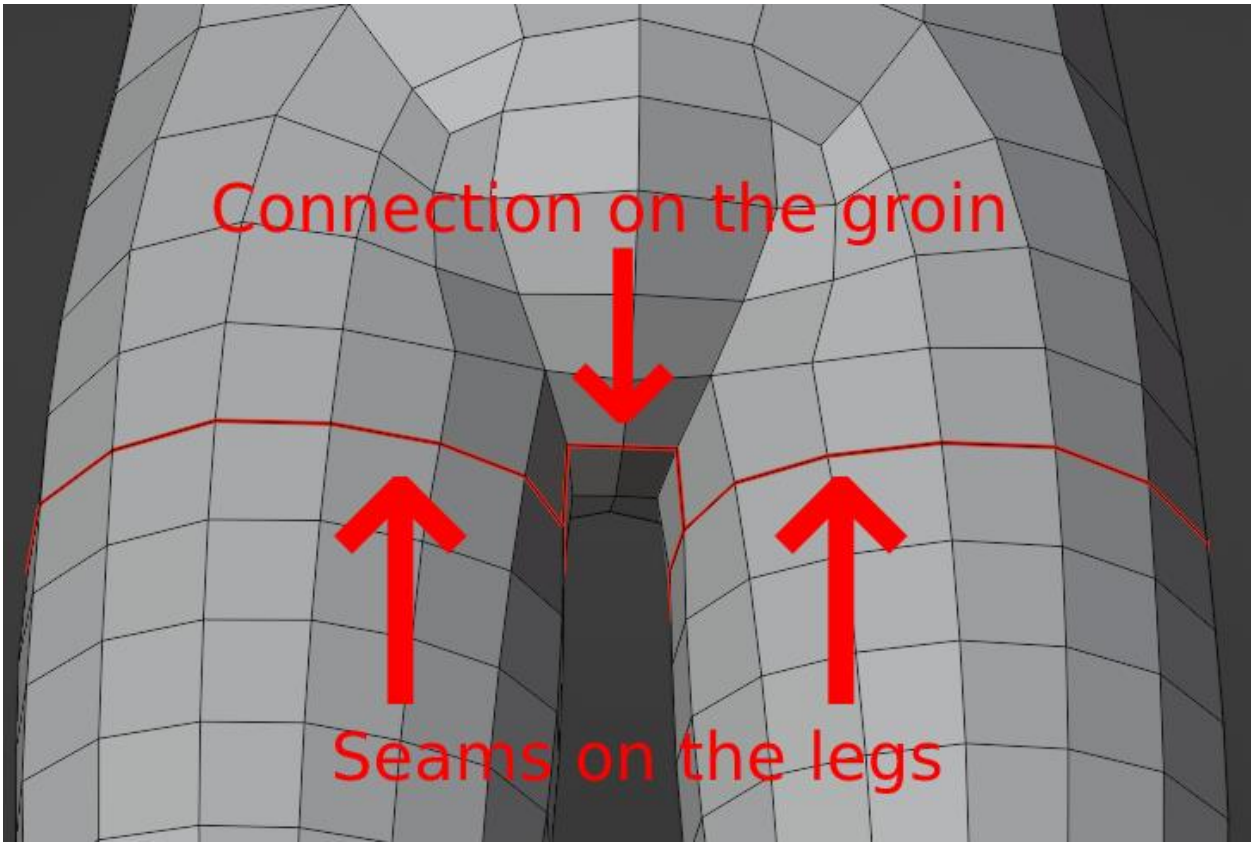

Level 0
Level 1
Level 2
Level 3

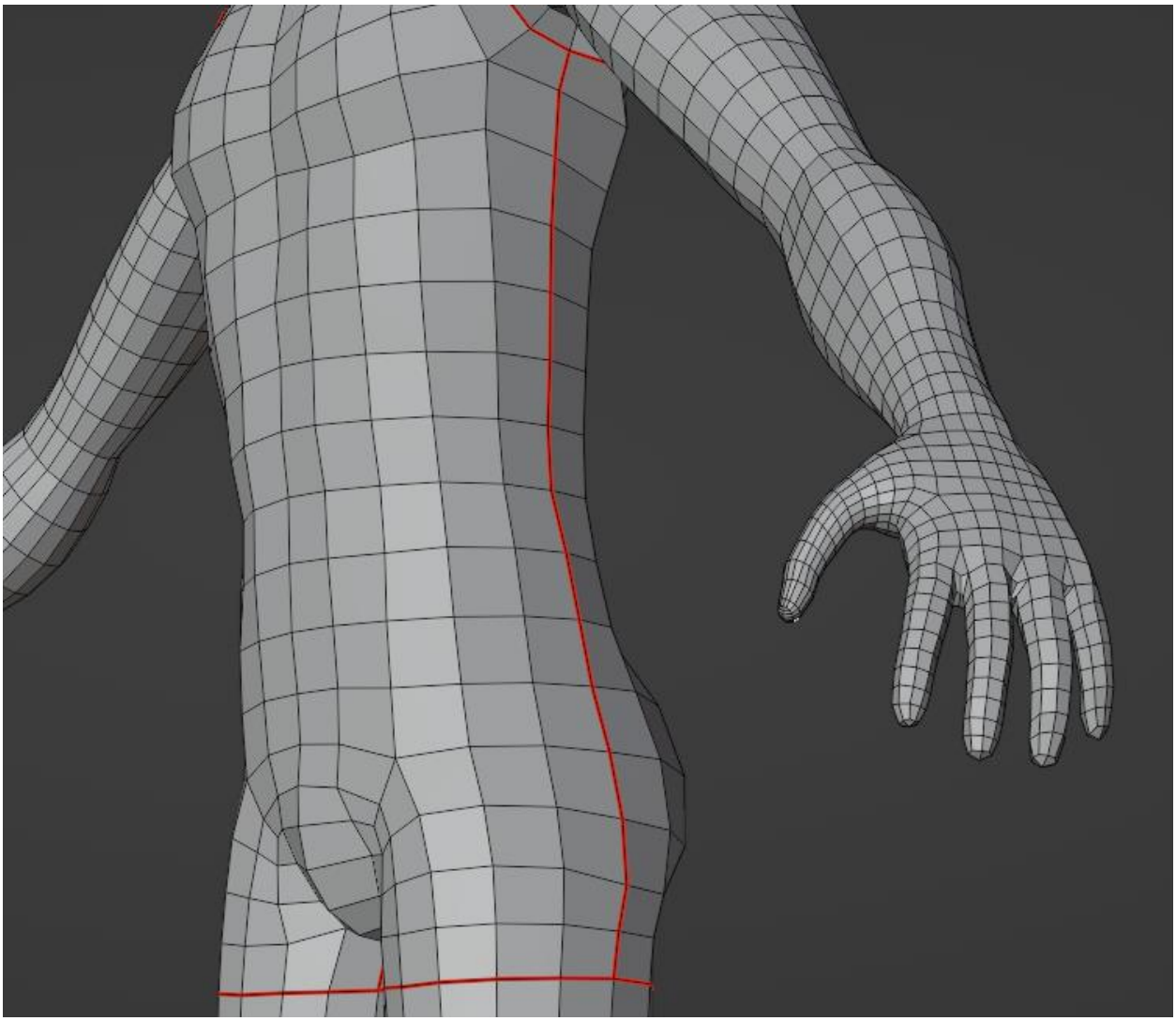


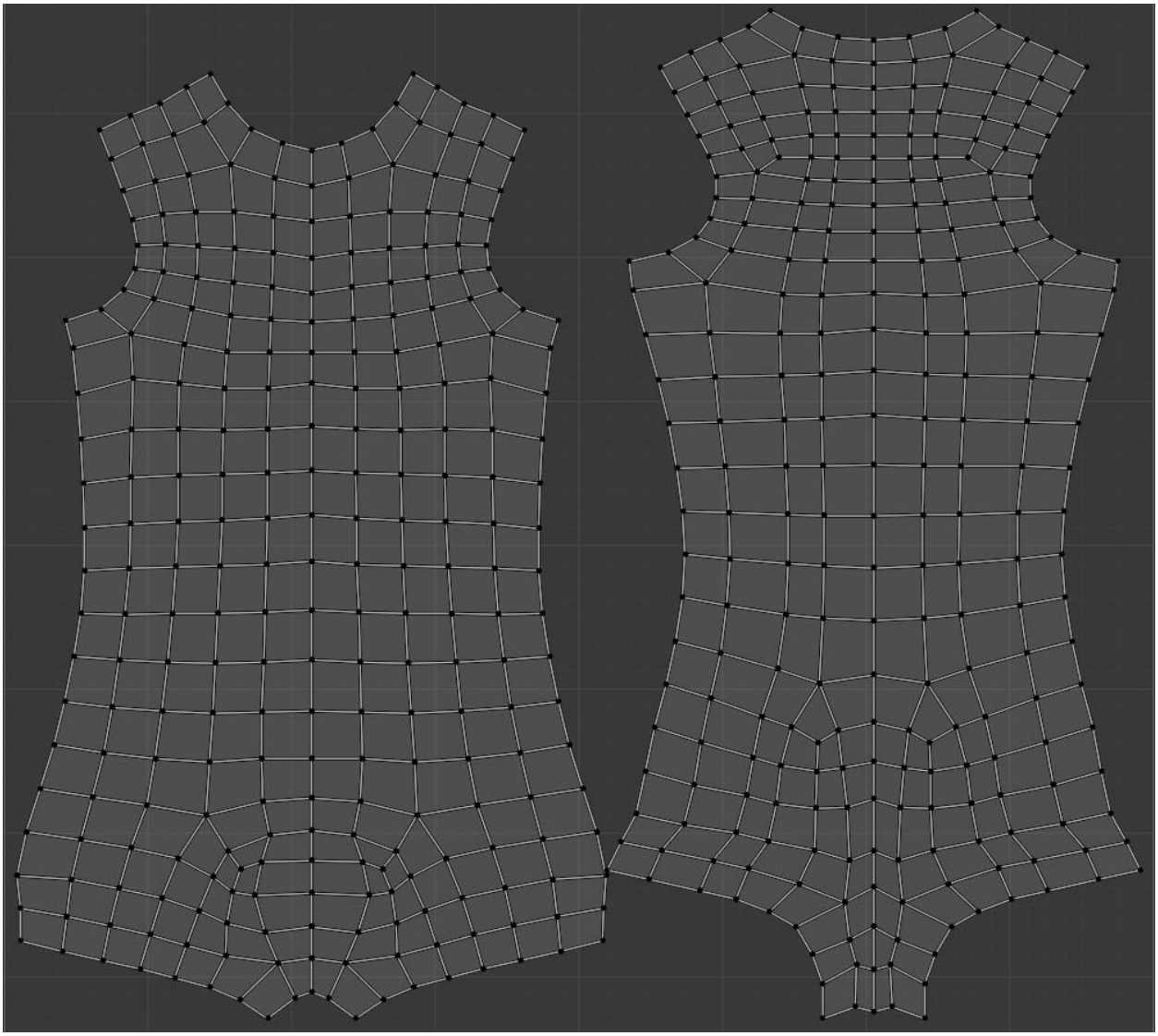


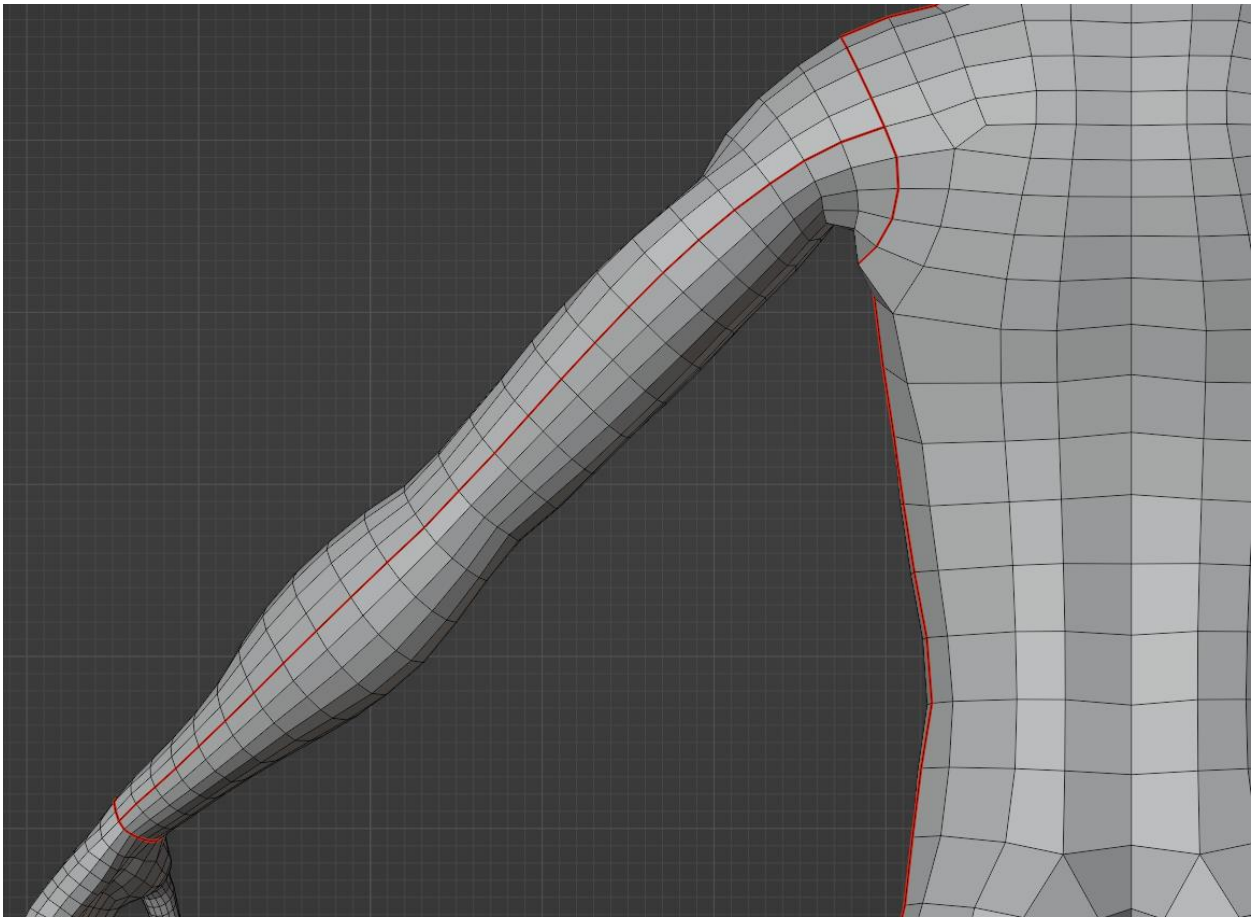


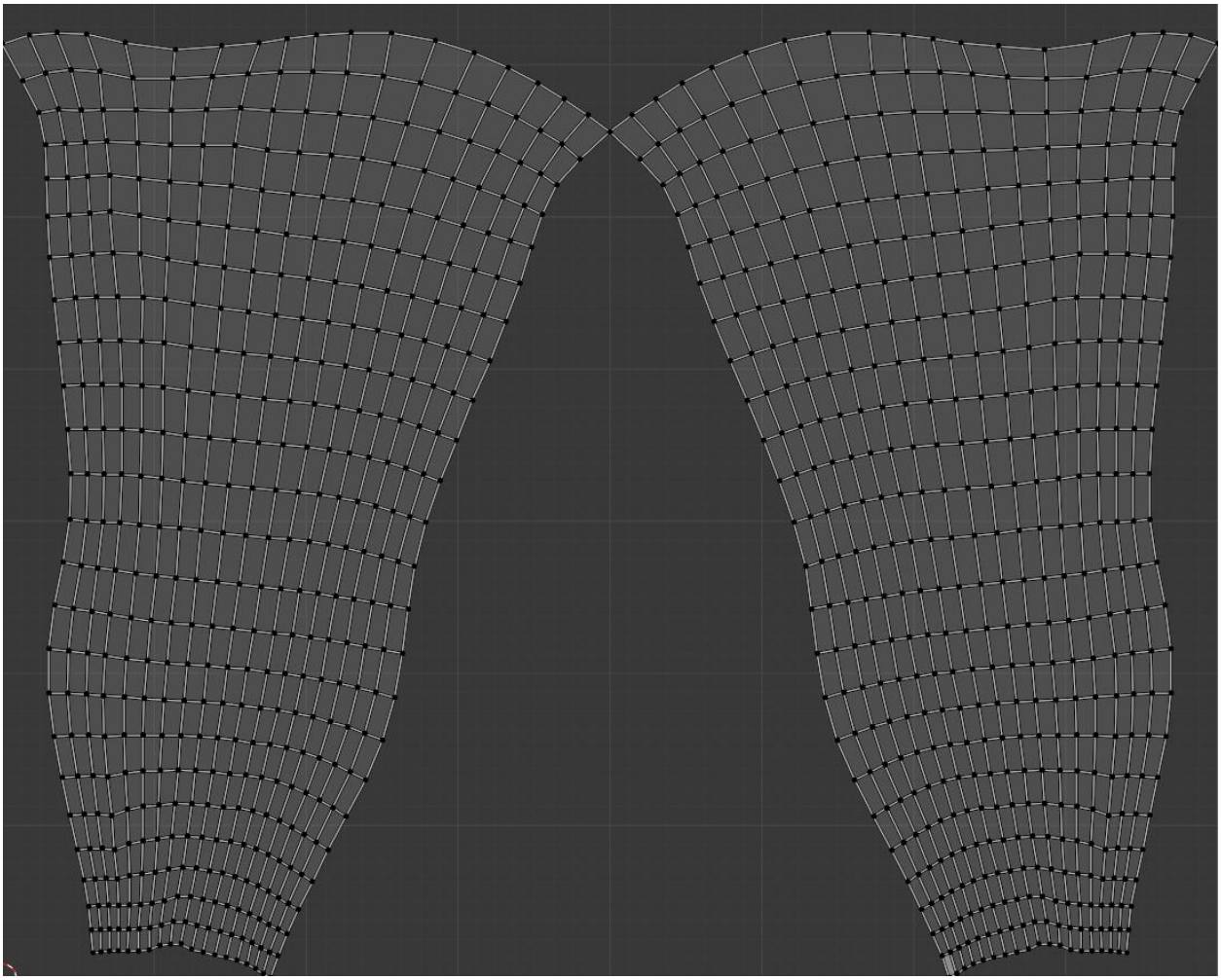


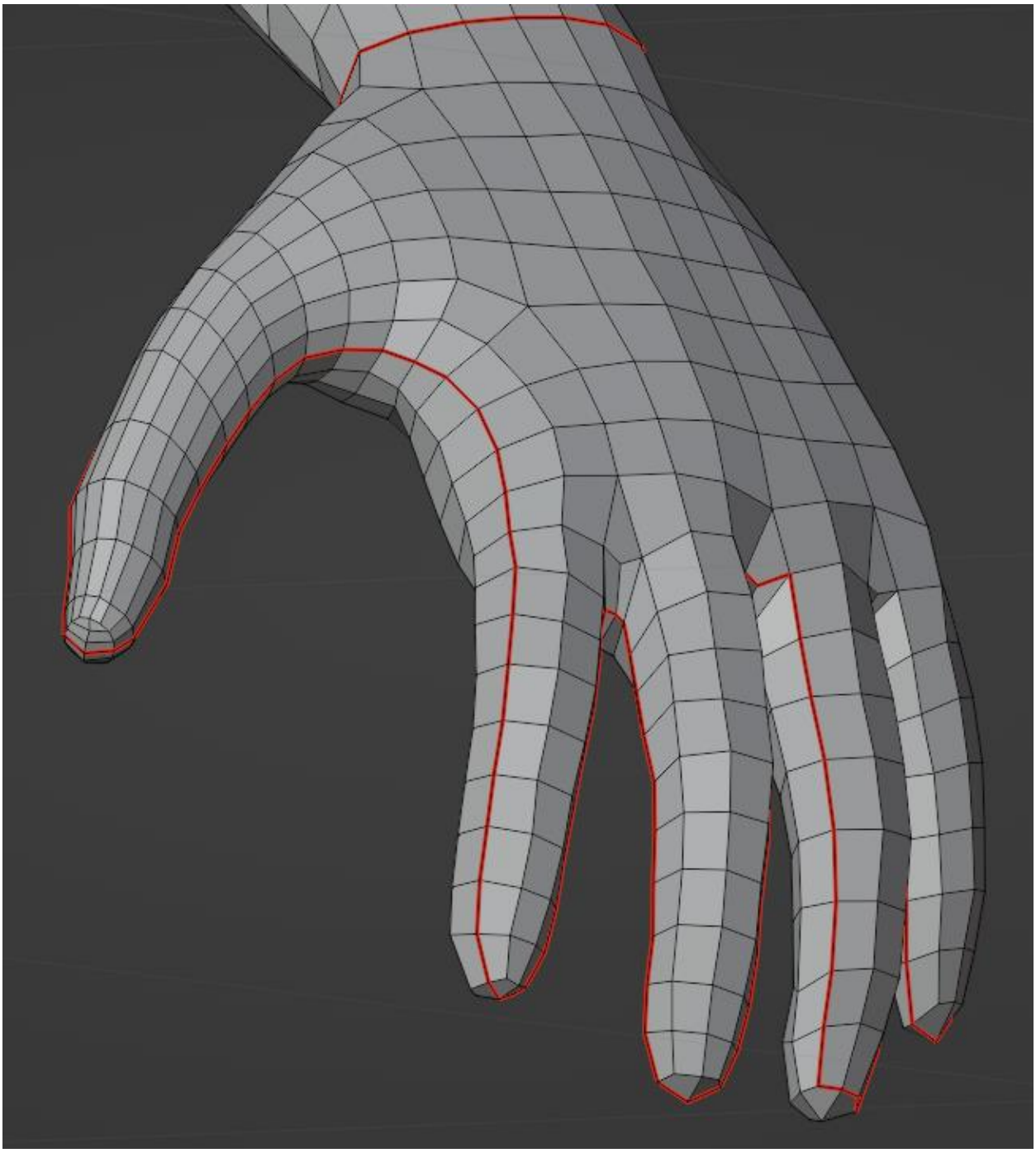

Connection on the groin
Seams on the legs

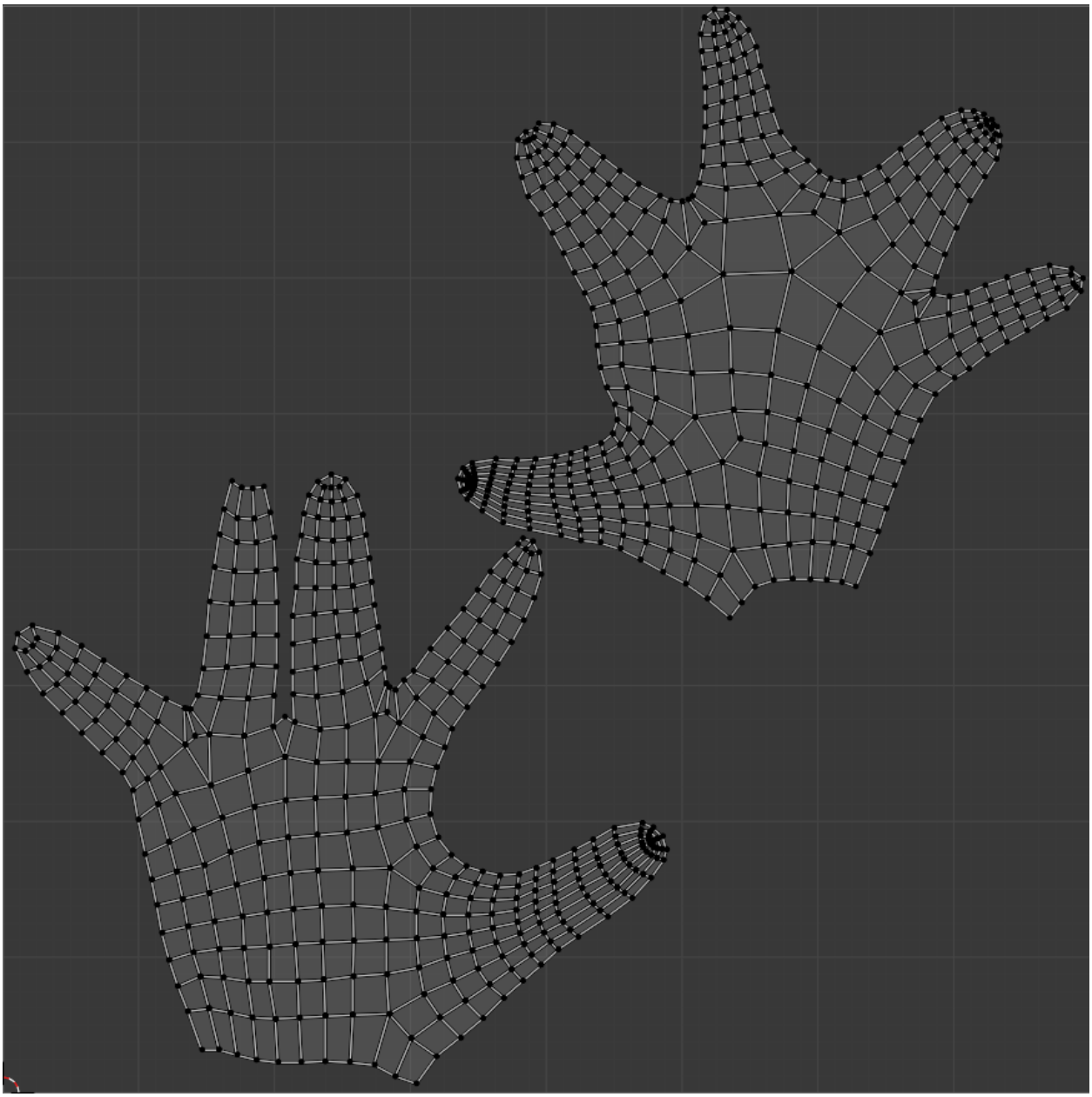


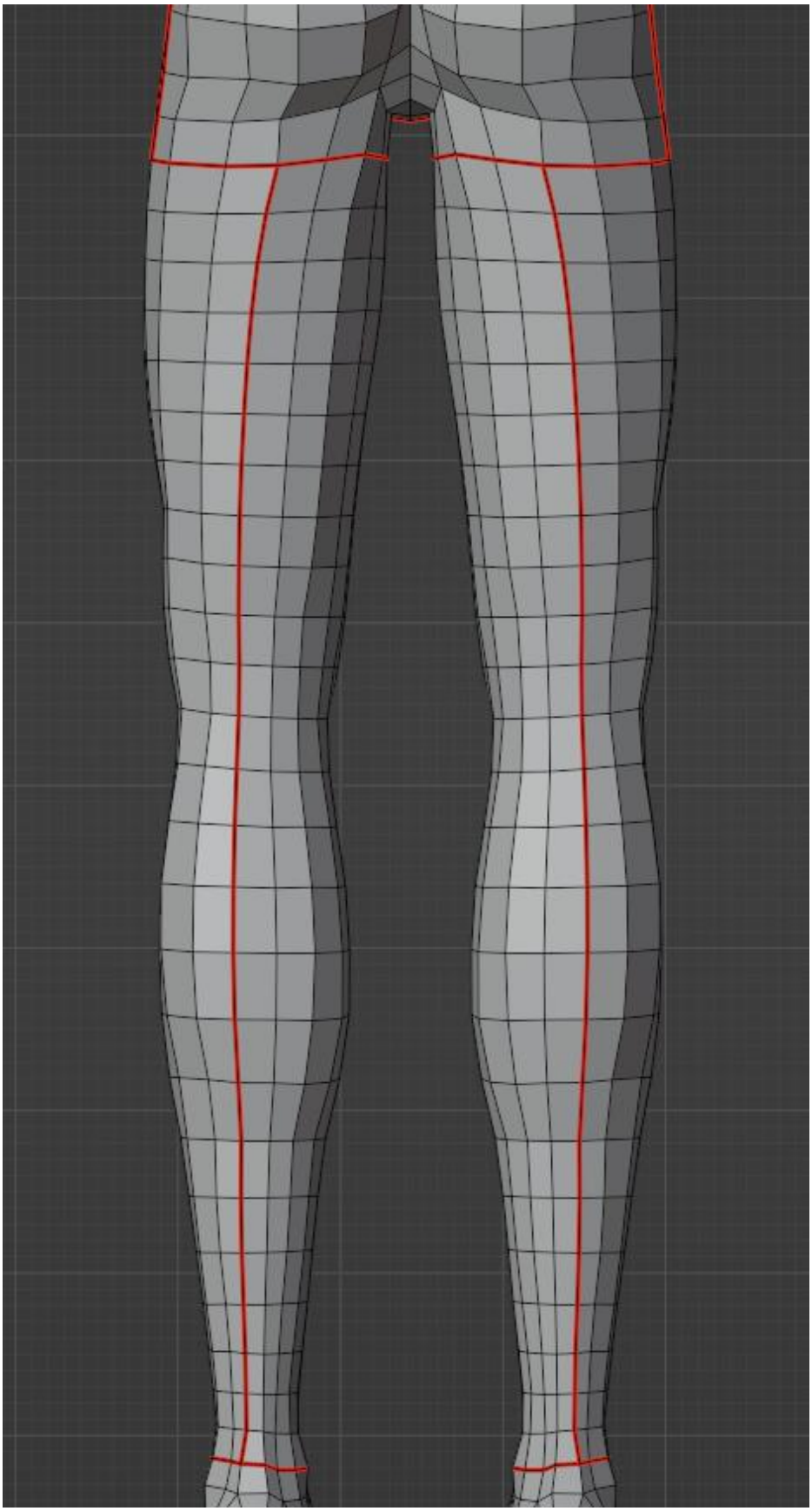


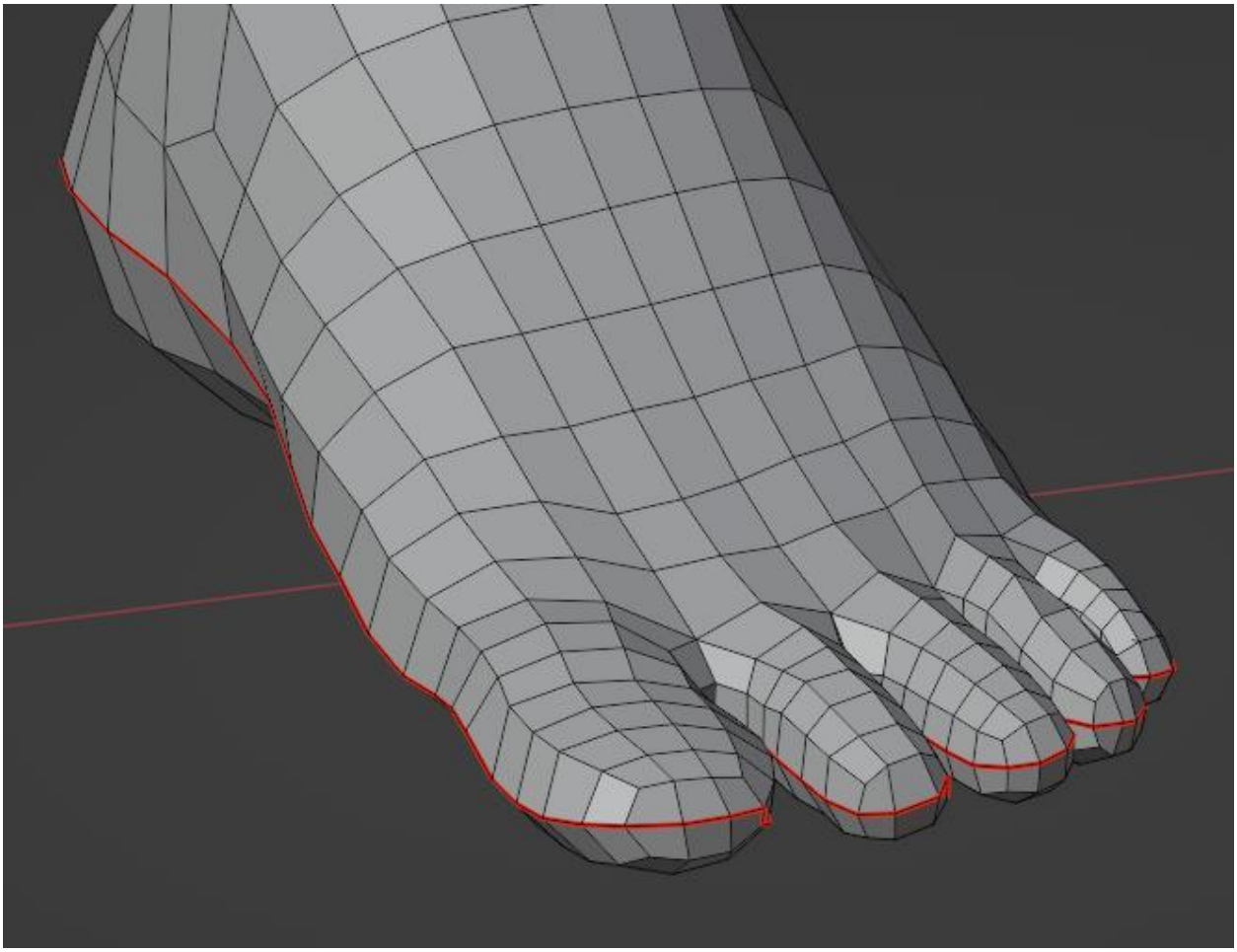


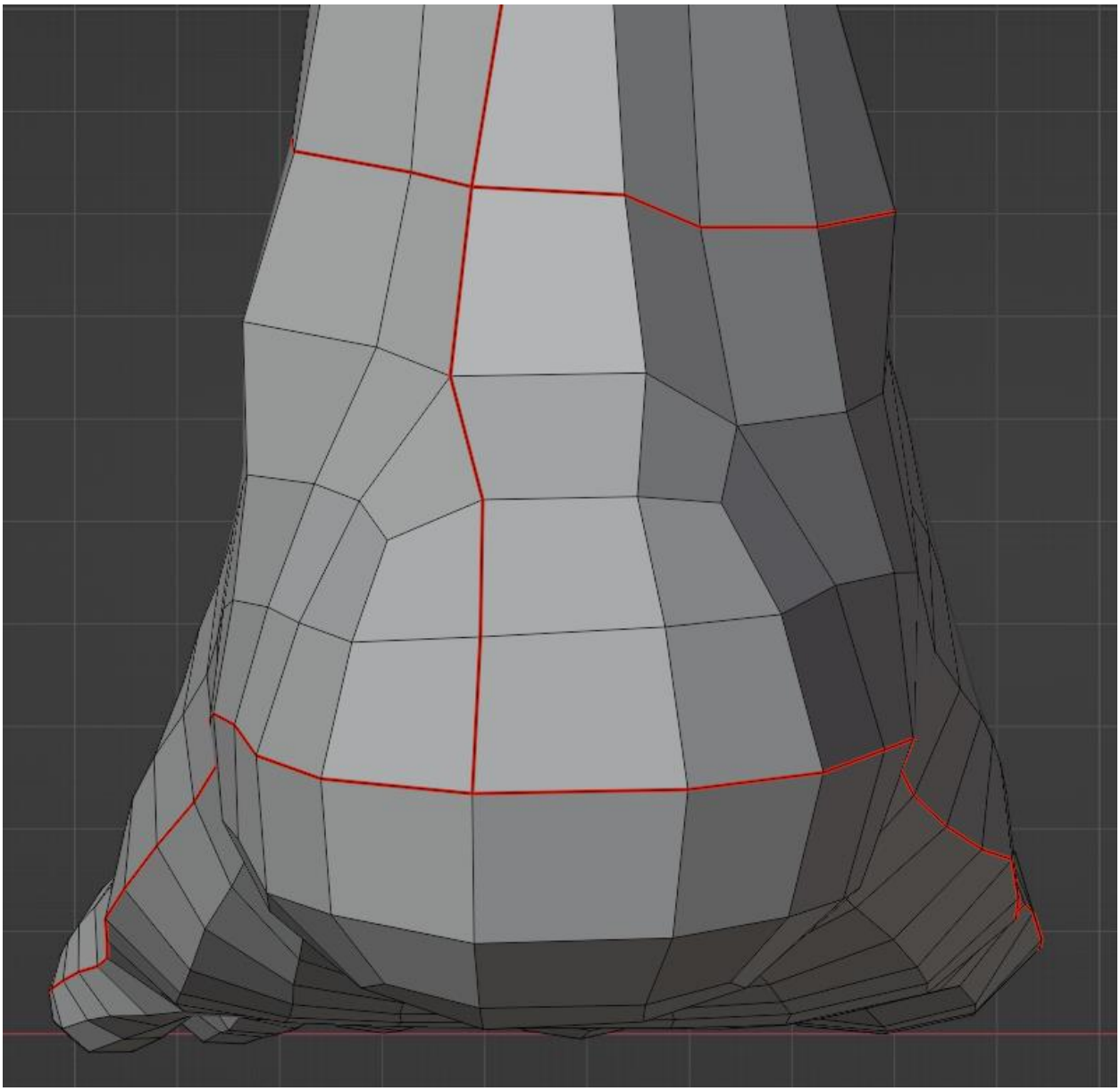


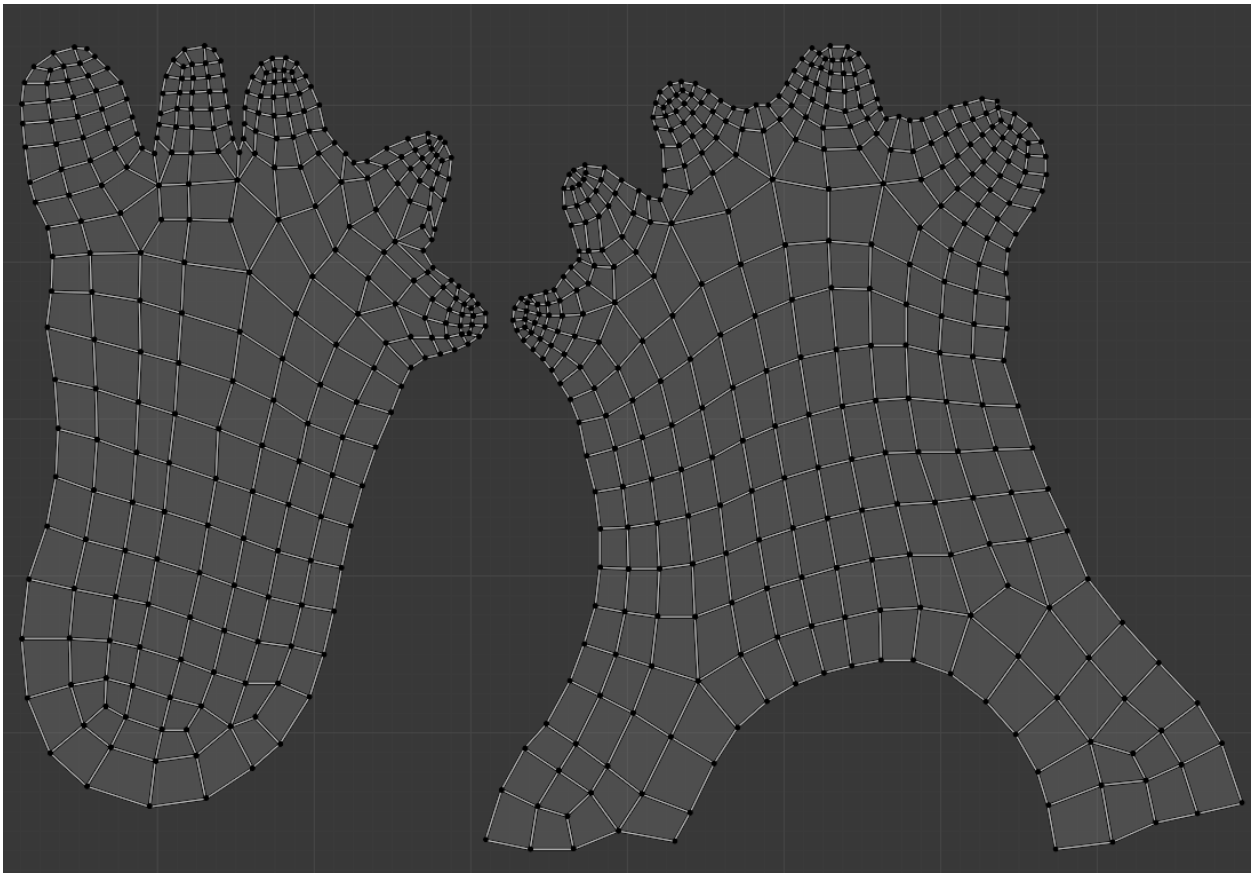


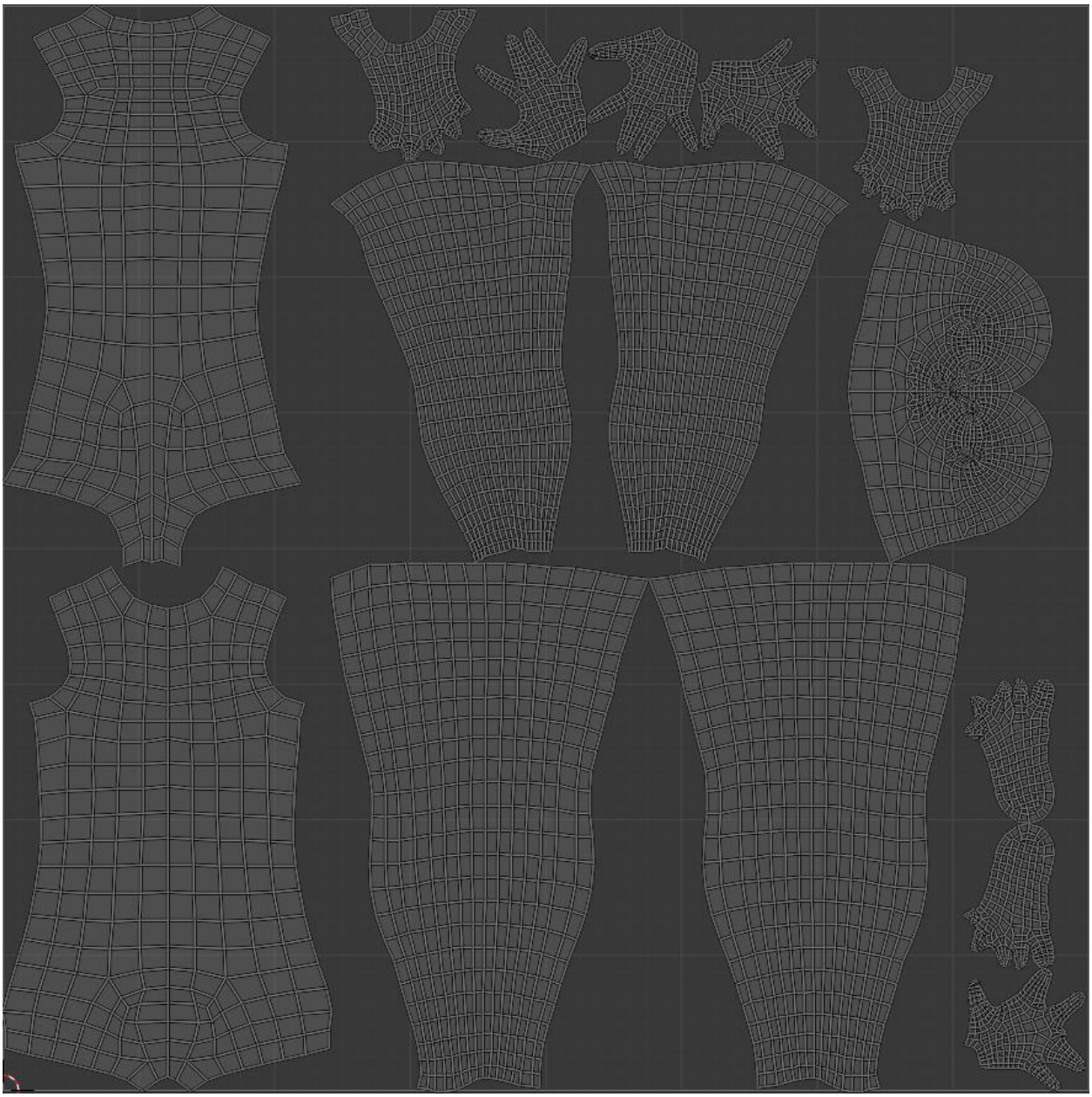




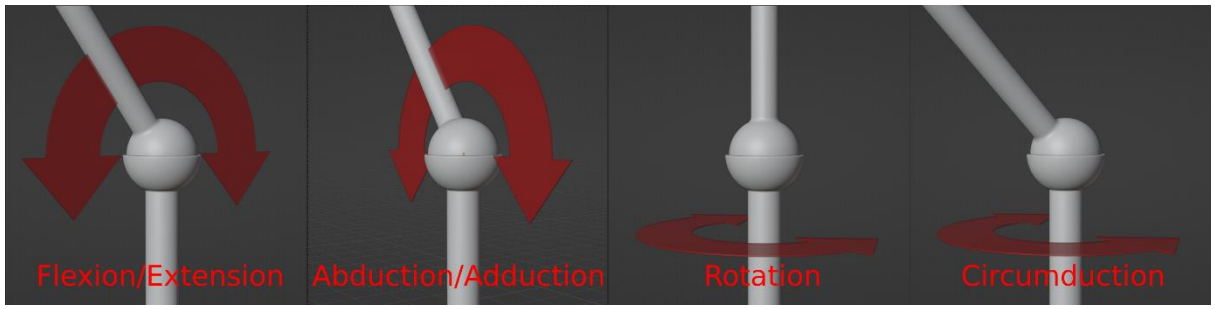


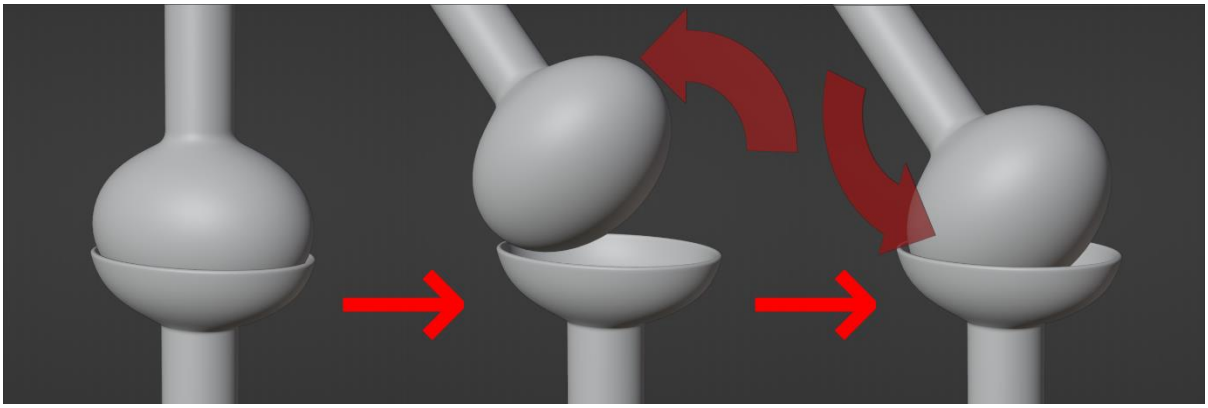


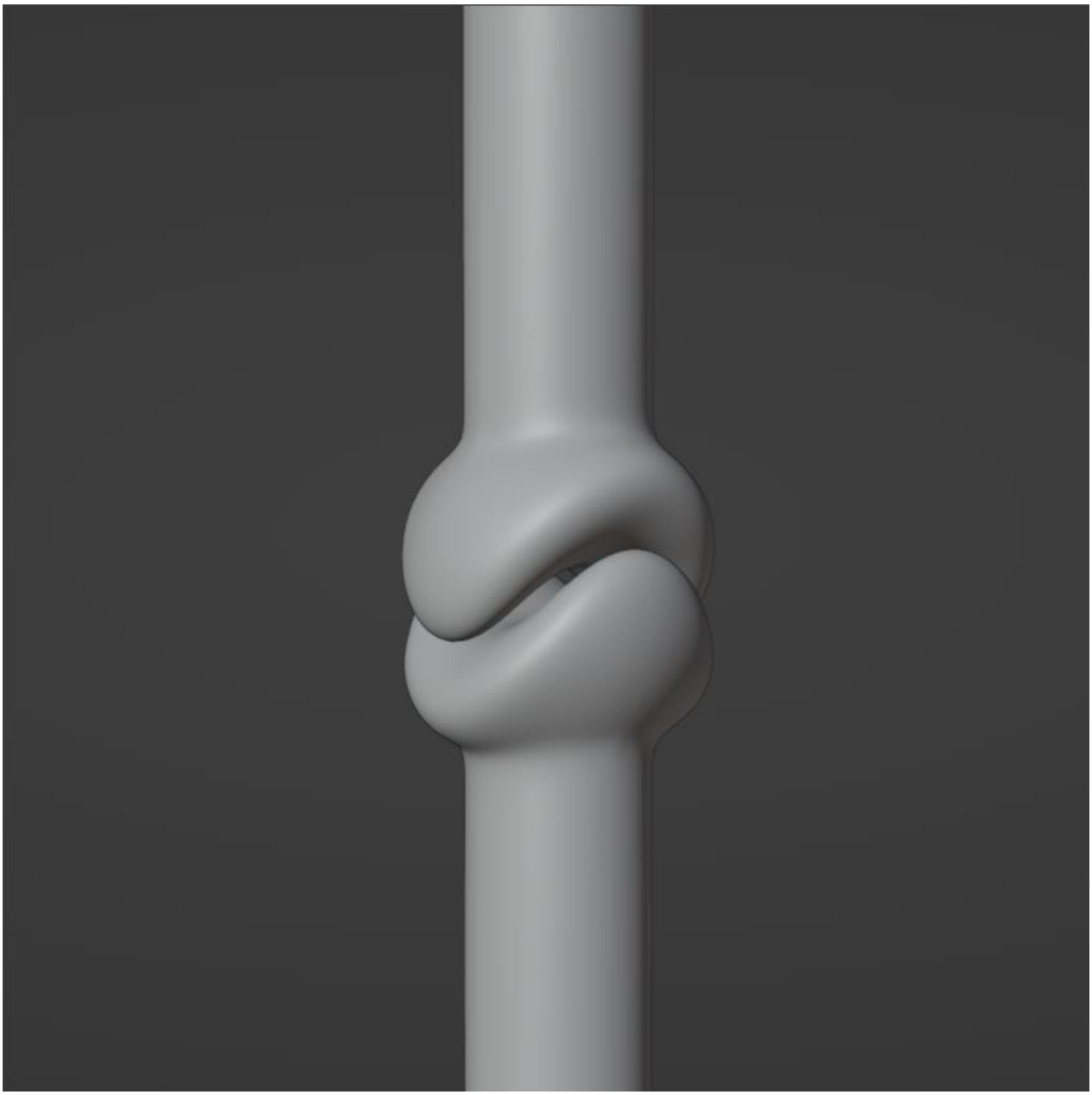


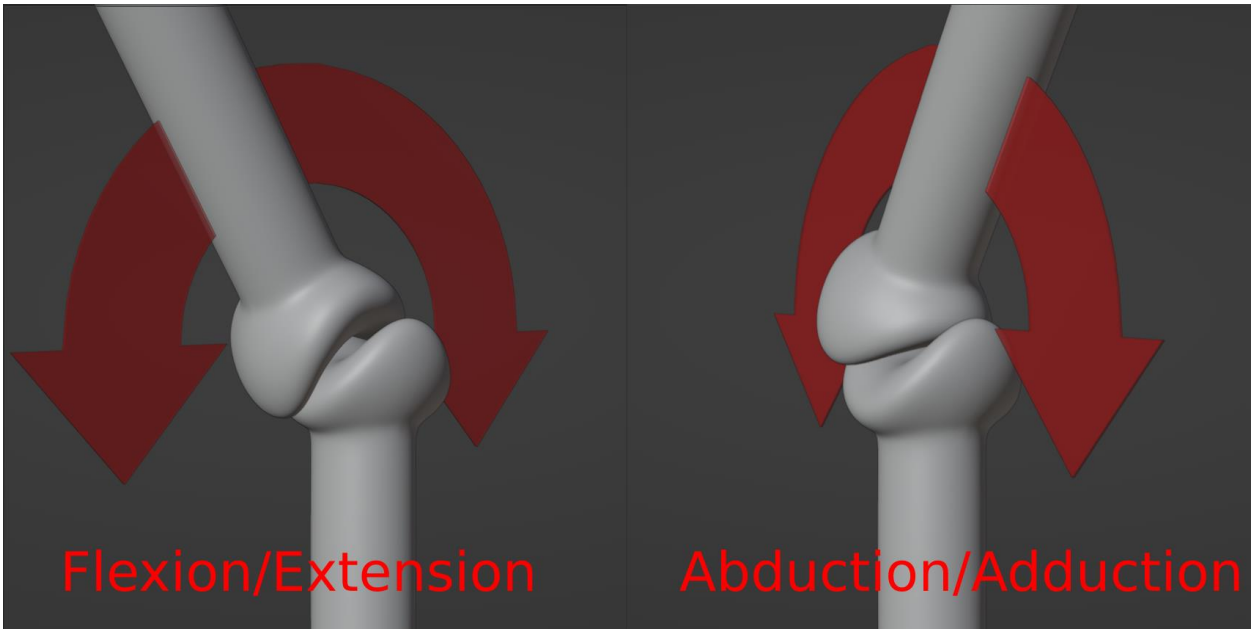


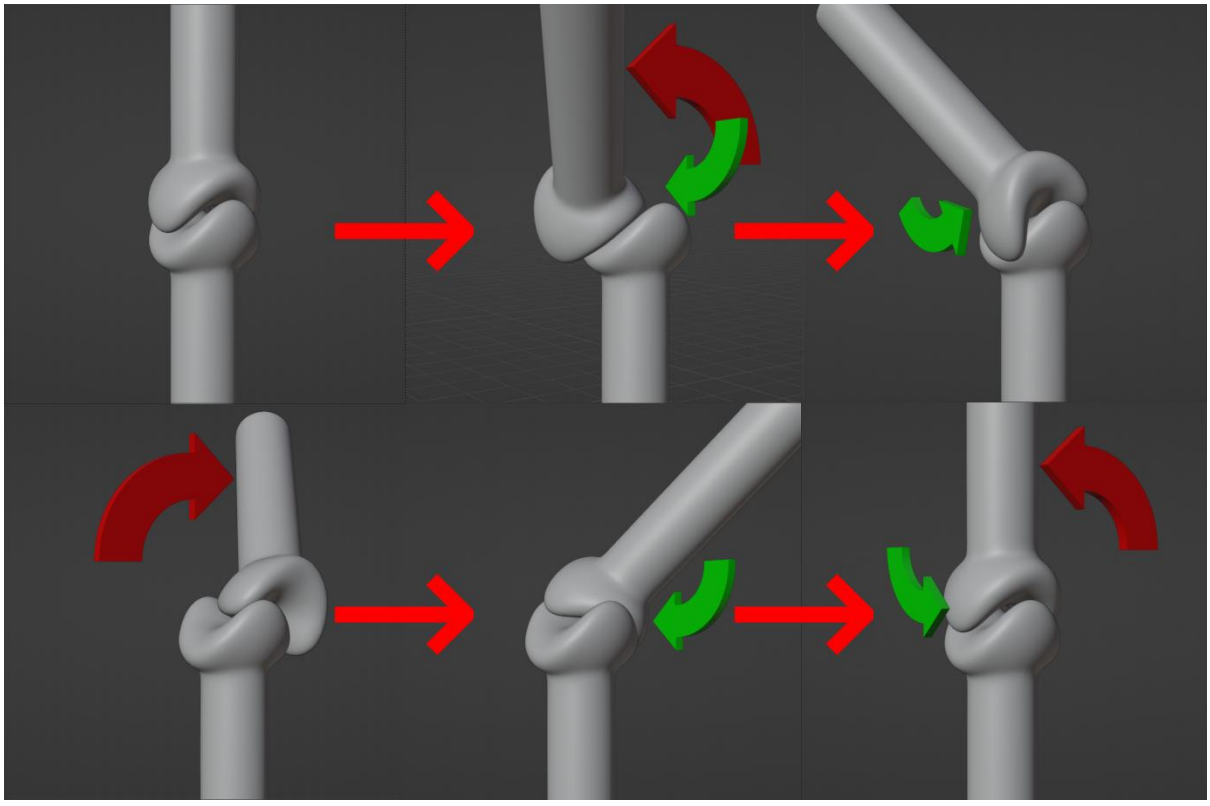
Chapter 10: Rigging the Base Meshes

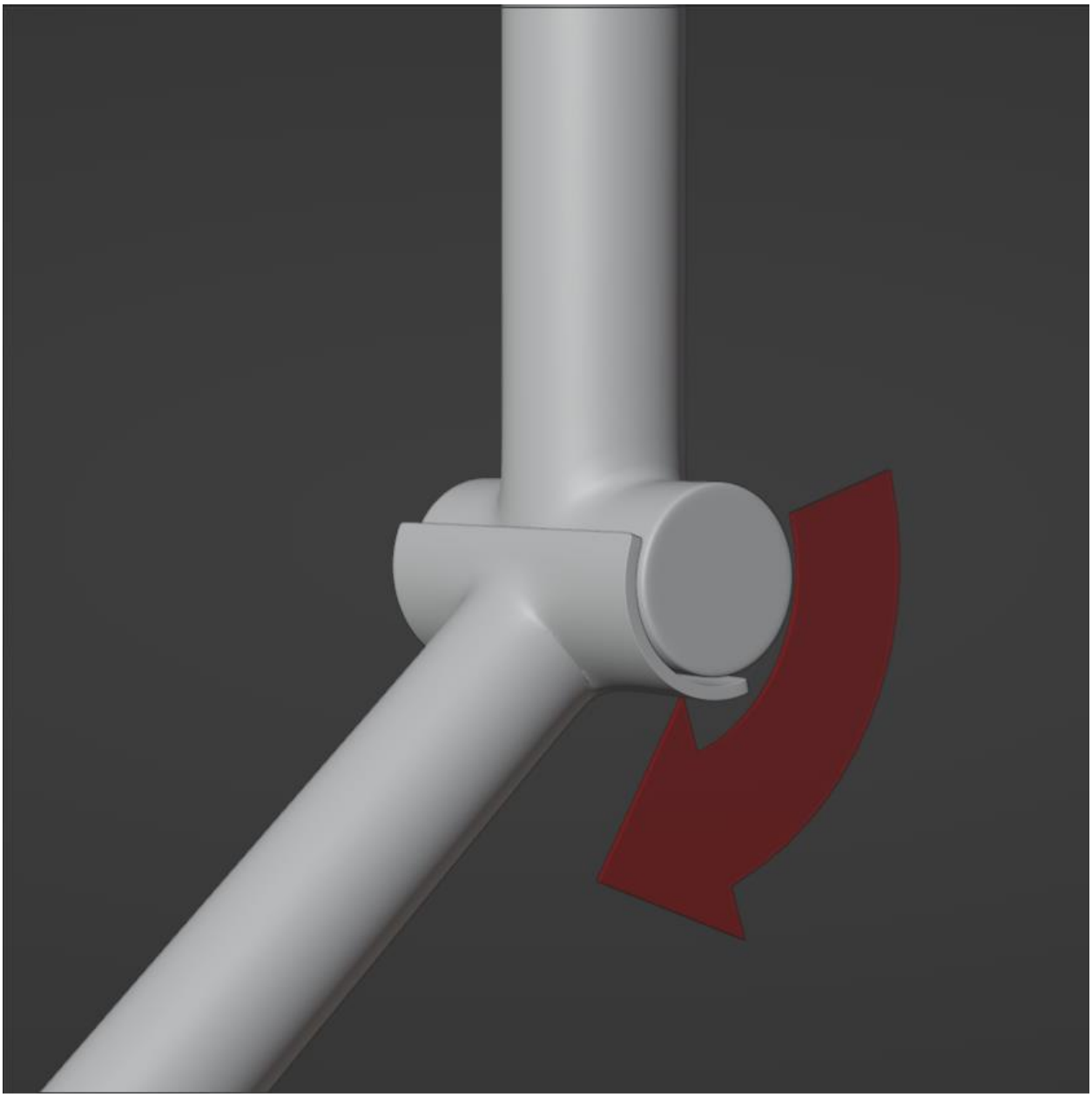


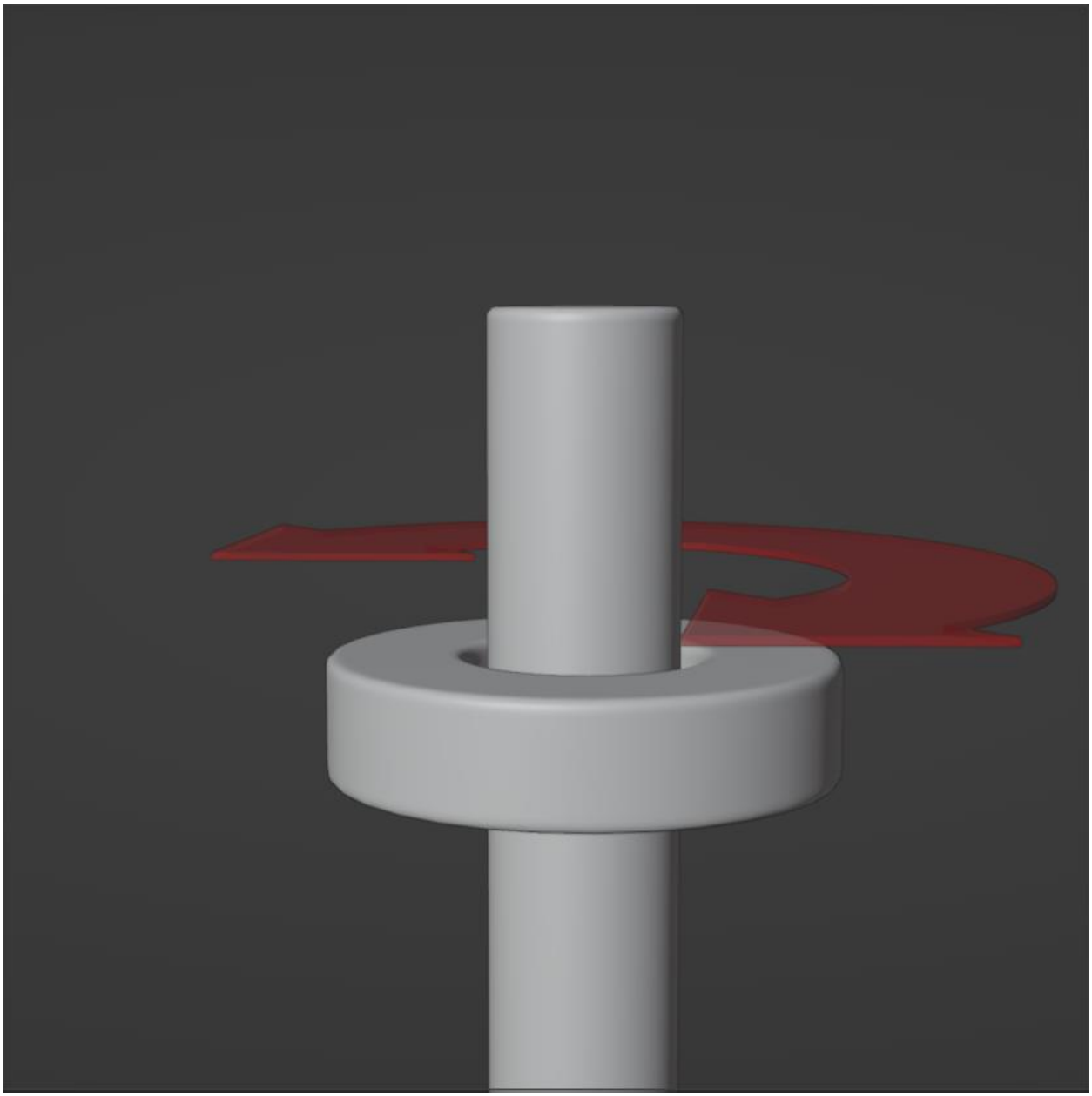


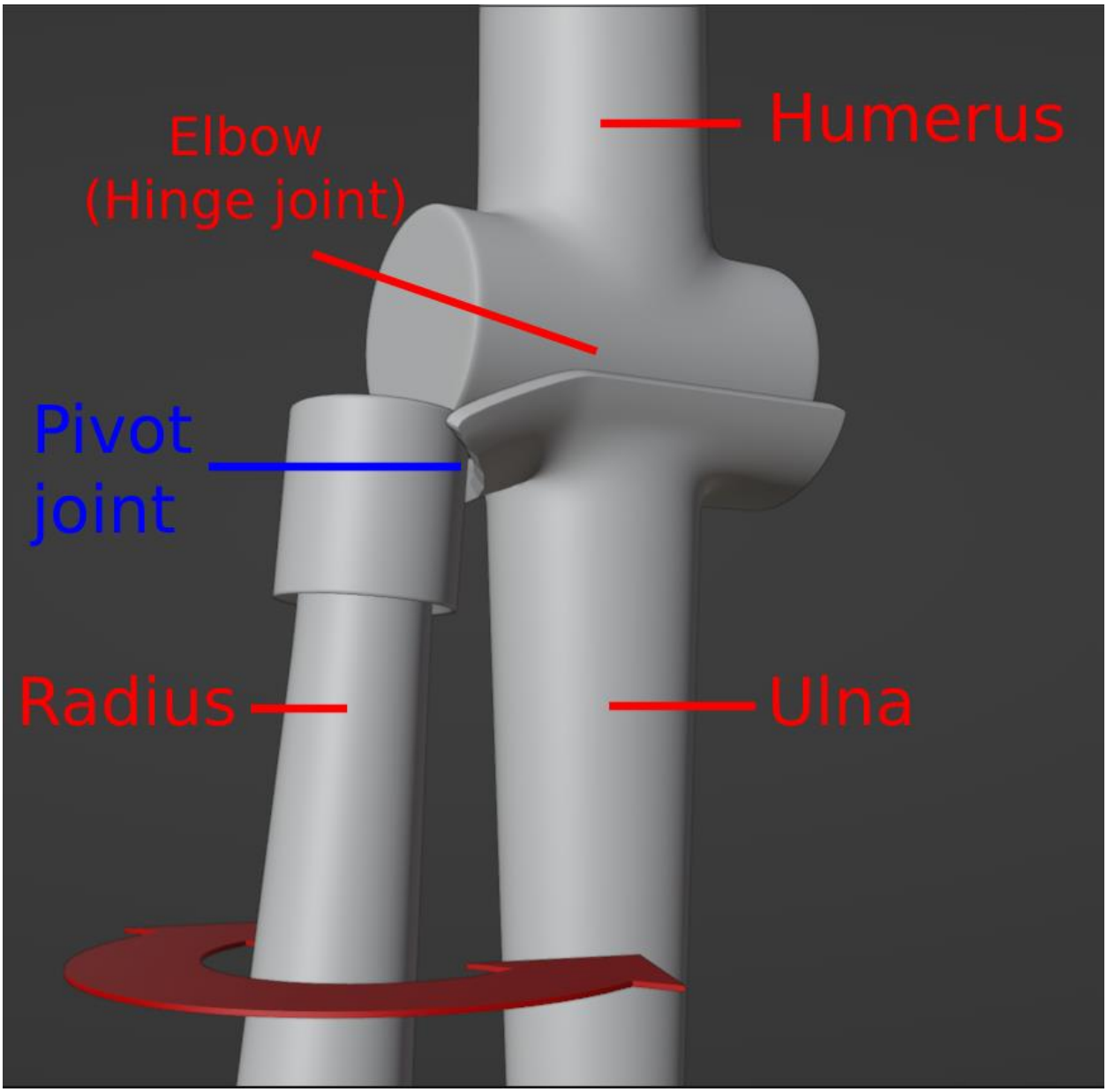


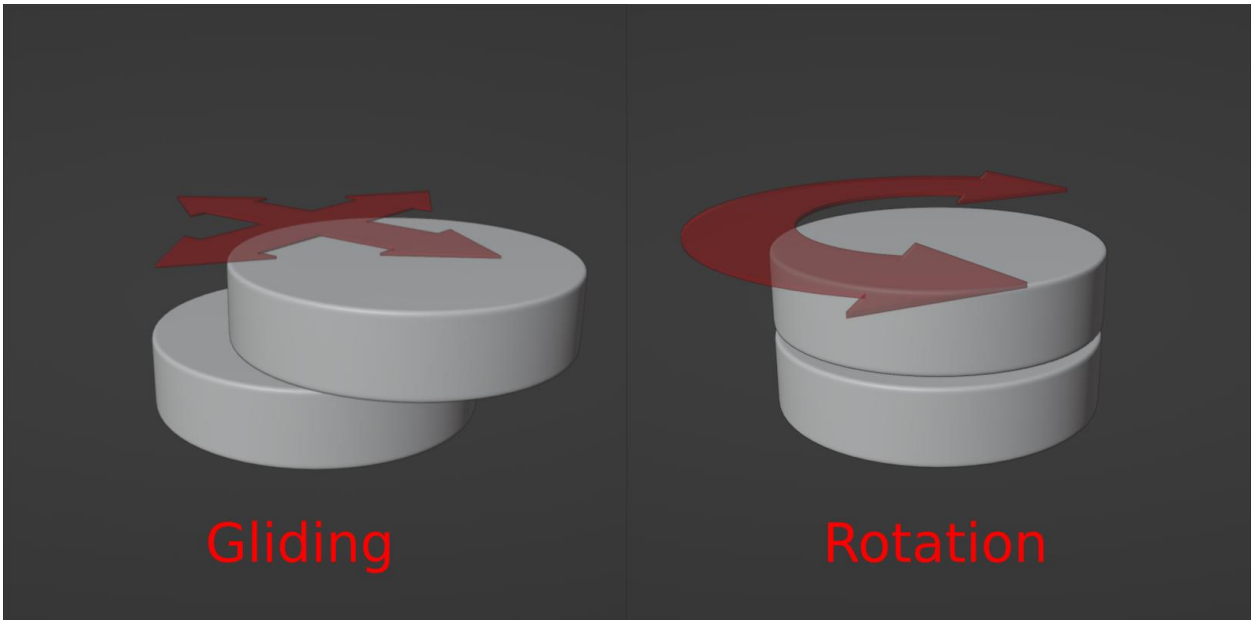

Flexion/Extension
Abduction/Adduction

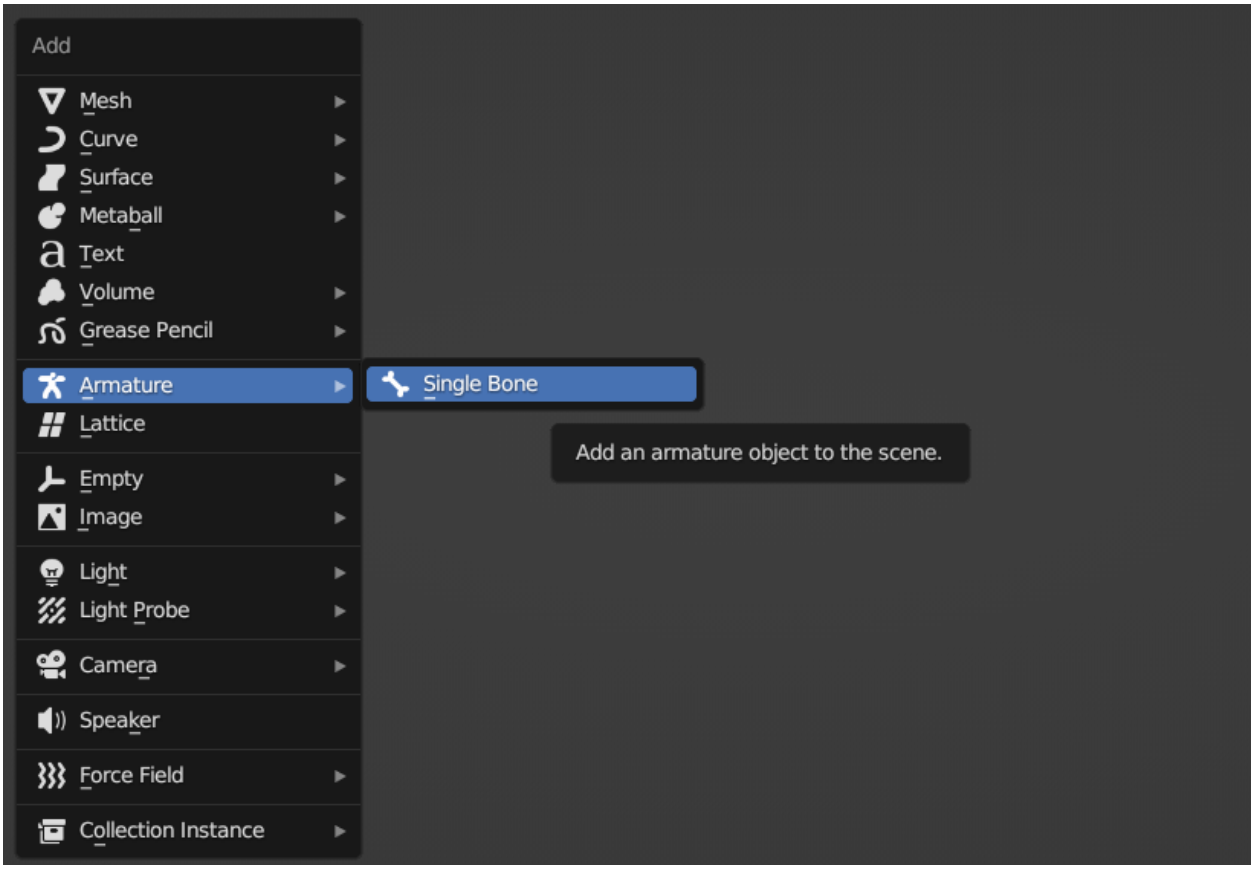


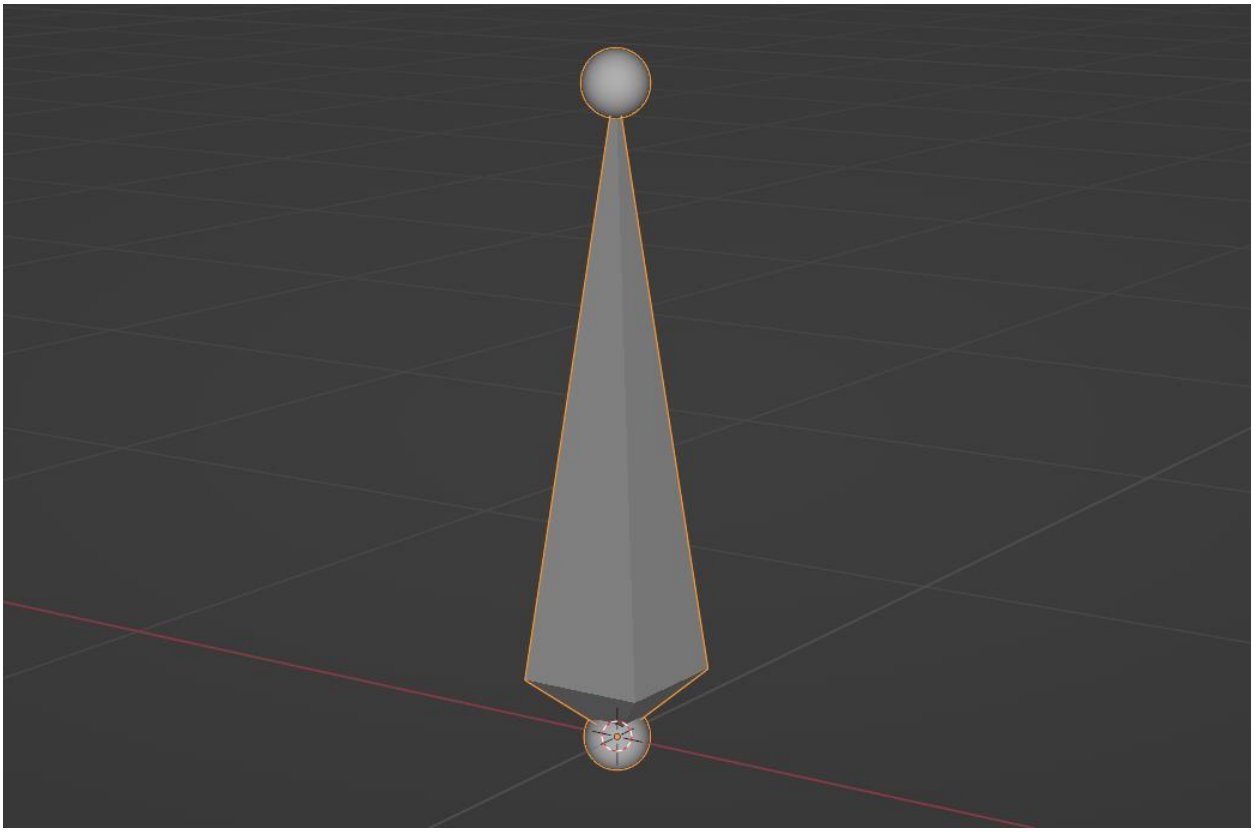


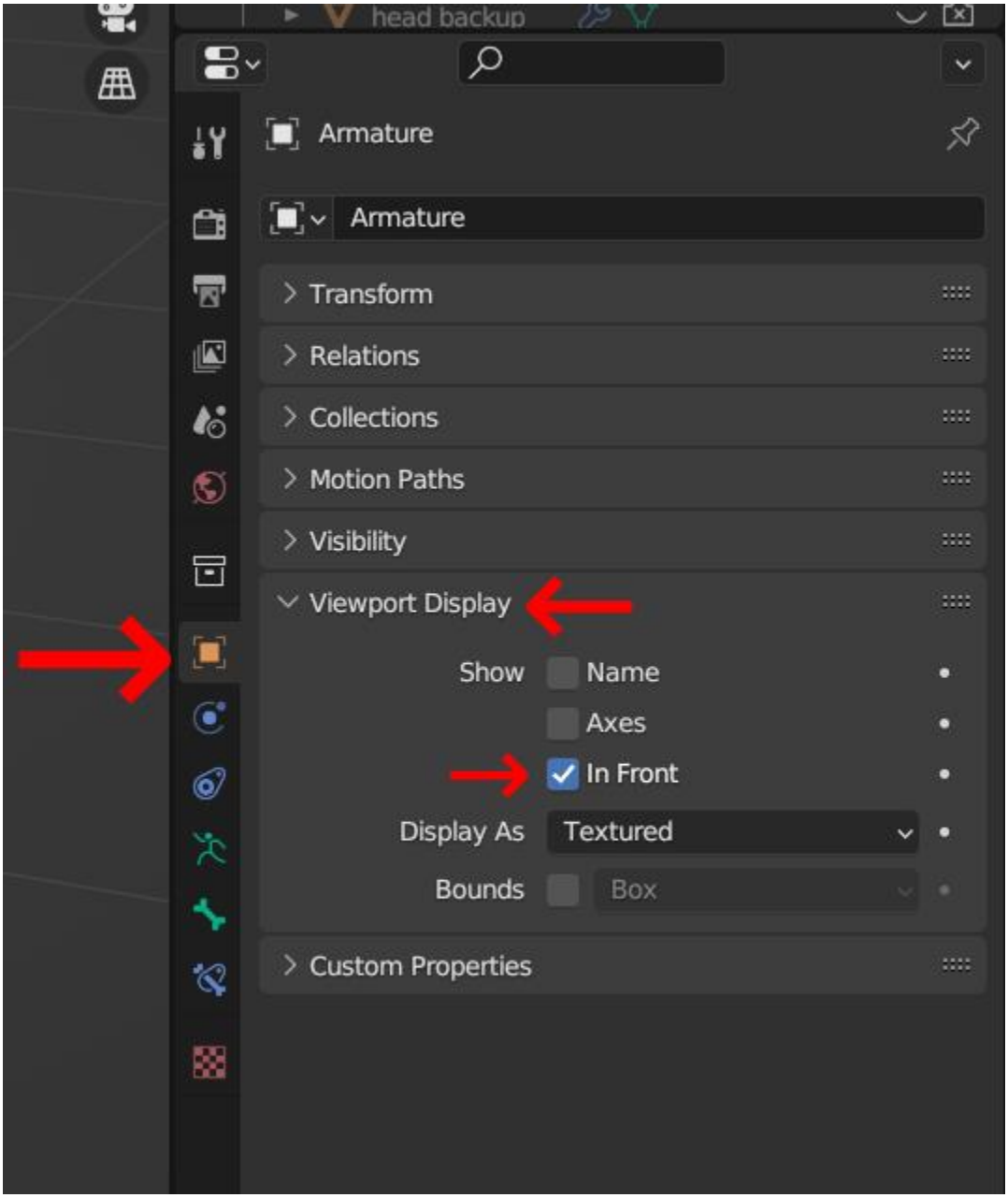


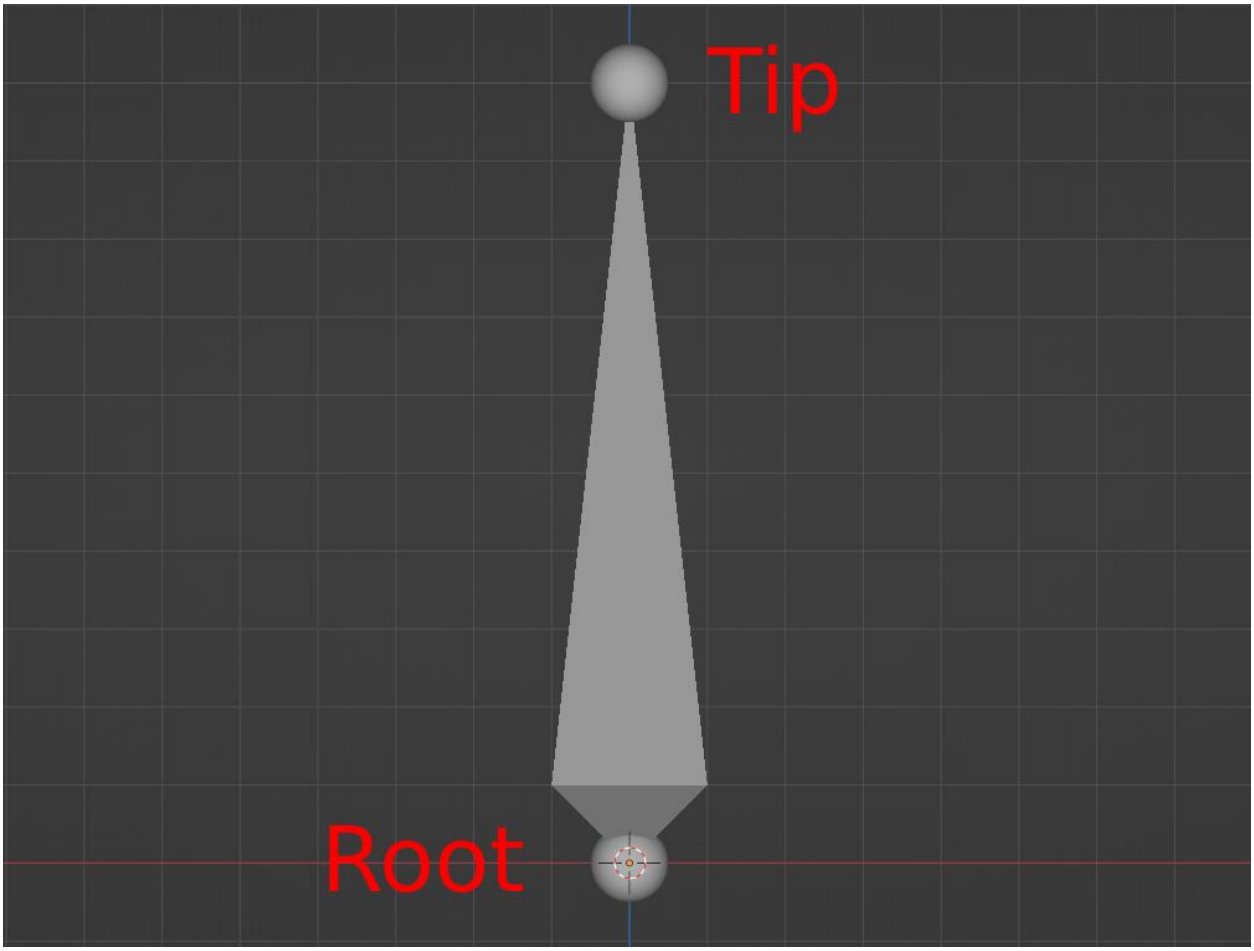

Humerus
Elbow
(Hinge joint)
Pivot
joint
Radius
Ulna

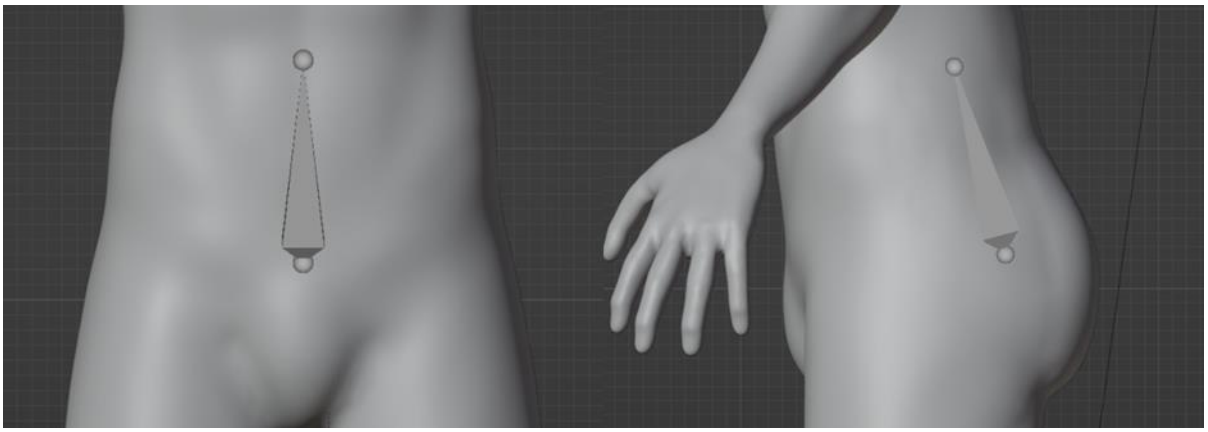

Gliding
Rotation

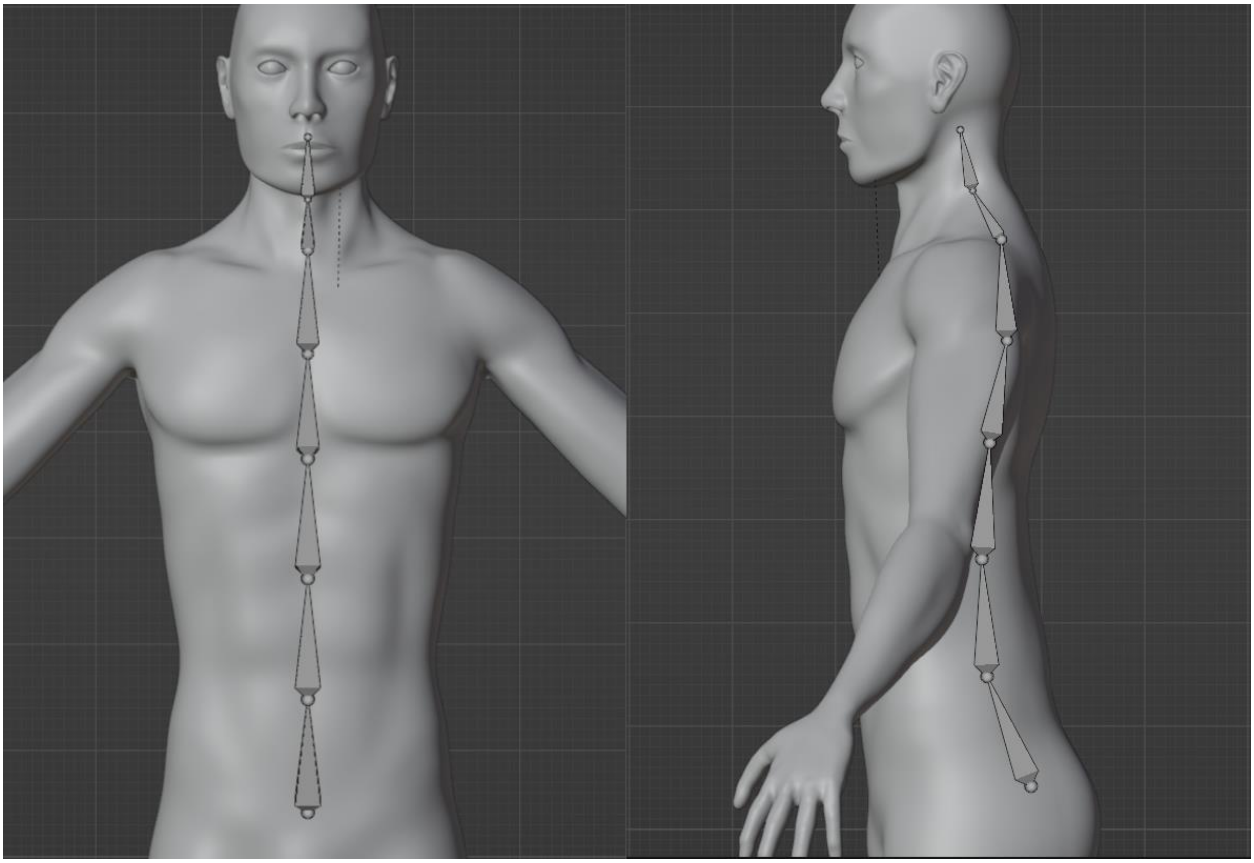

Add
Mesh
Curve
Surface
Metaball
Text
Volume
Grease Pencil
Armature
Lattice
Empty
Image
Light
Light Probe
Camera
Speaker
Force Field
Collection Instance
Single Bone
Add an armature object to the scene.

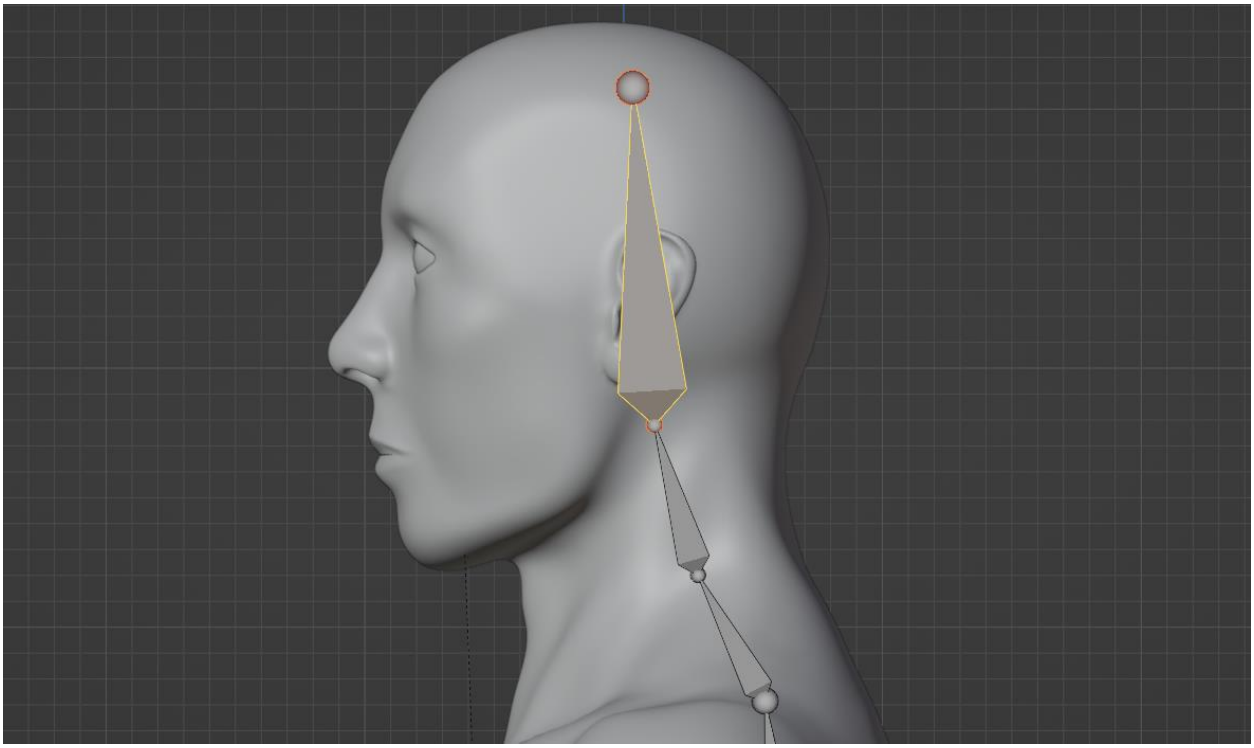


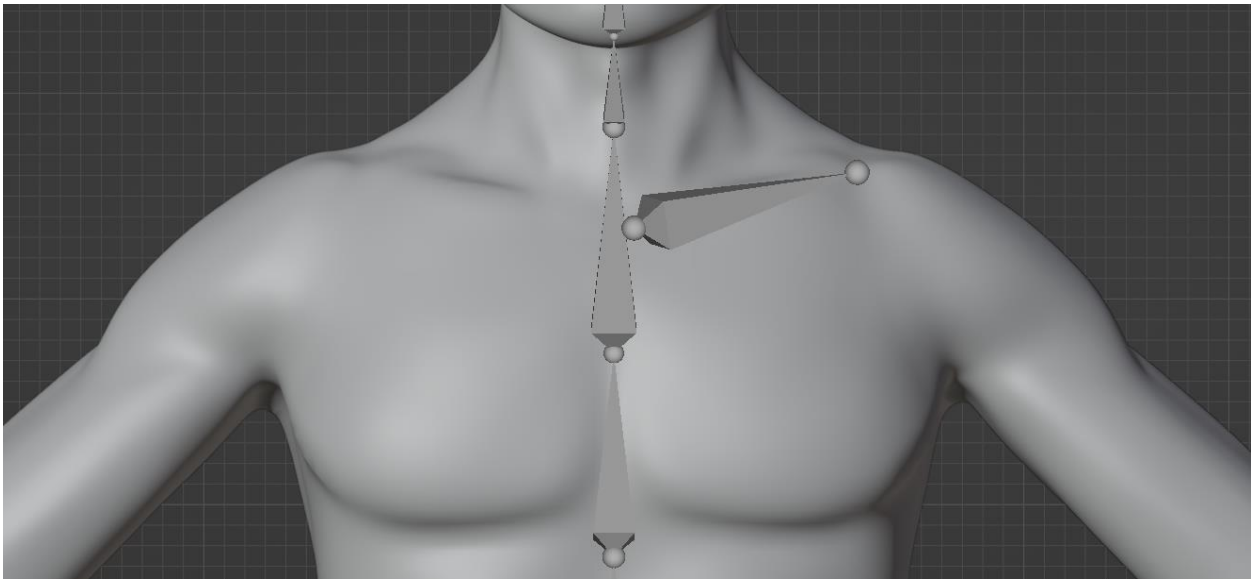

head backup
Armature
Armature
Transform
Relations
Collections
Motion Paths
Visibility
Viewport Display
Show
Name
Axes
In Front
Display As
Textured
Bounds
Box
Custom Properties

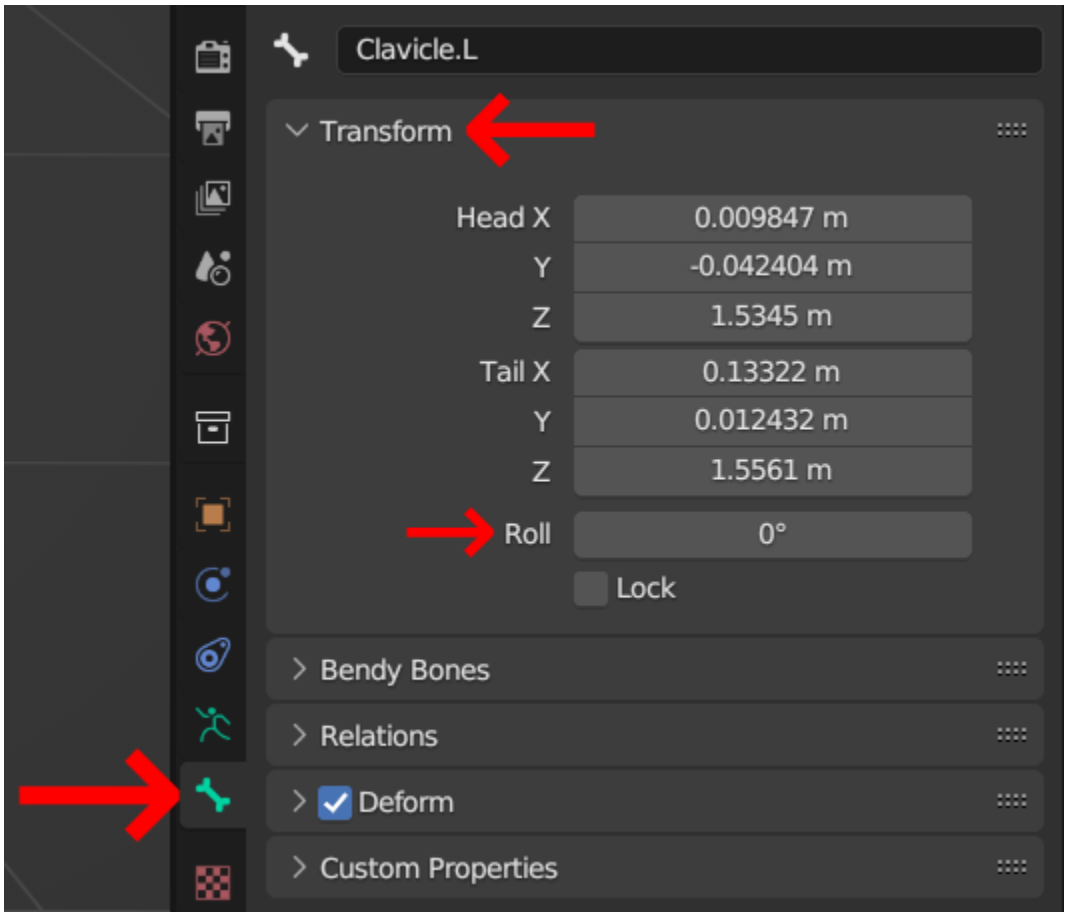

Tip
Root

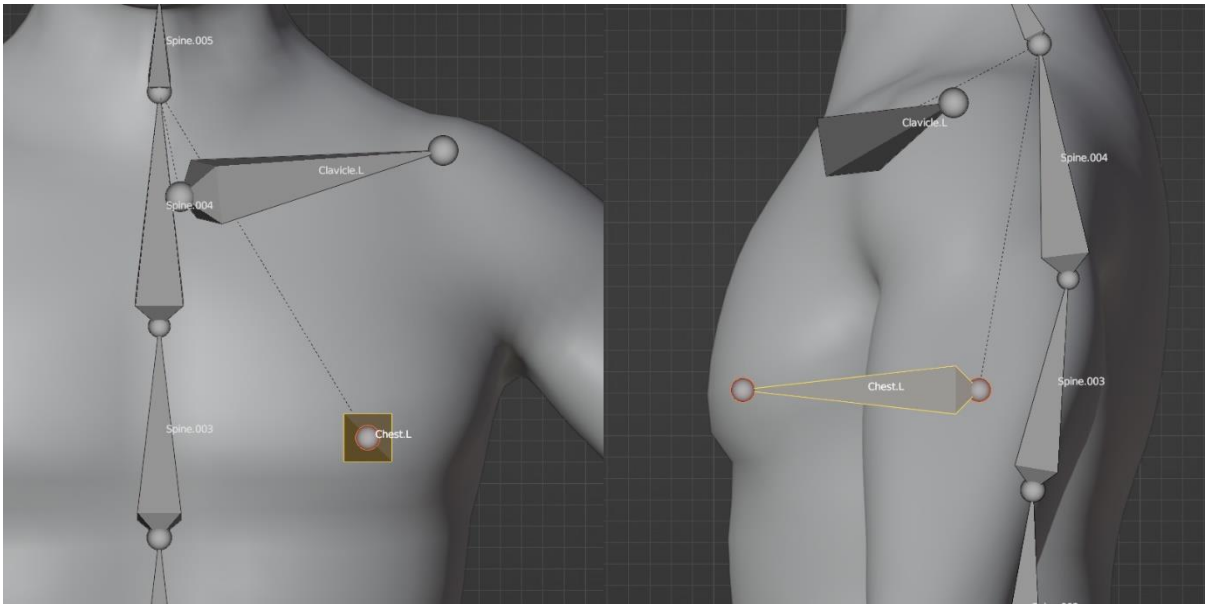


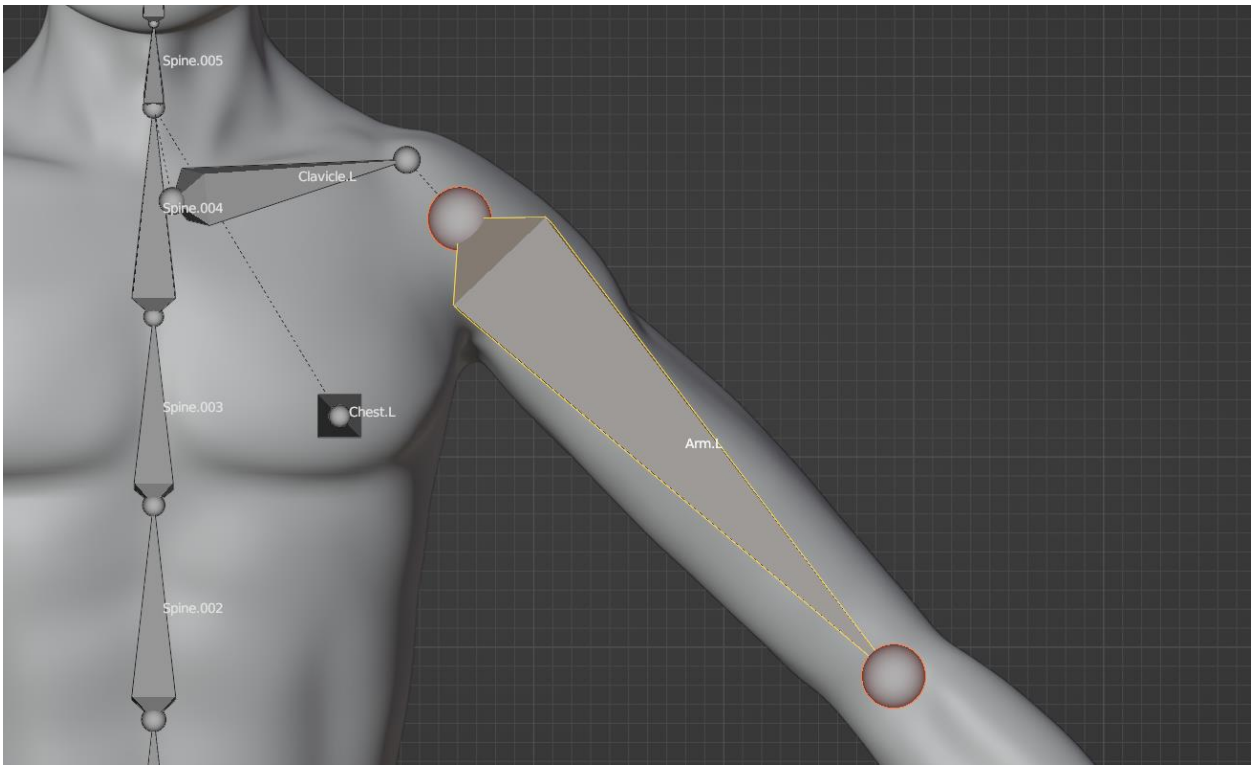


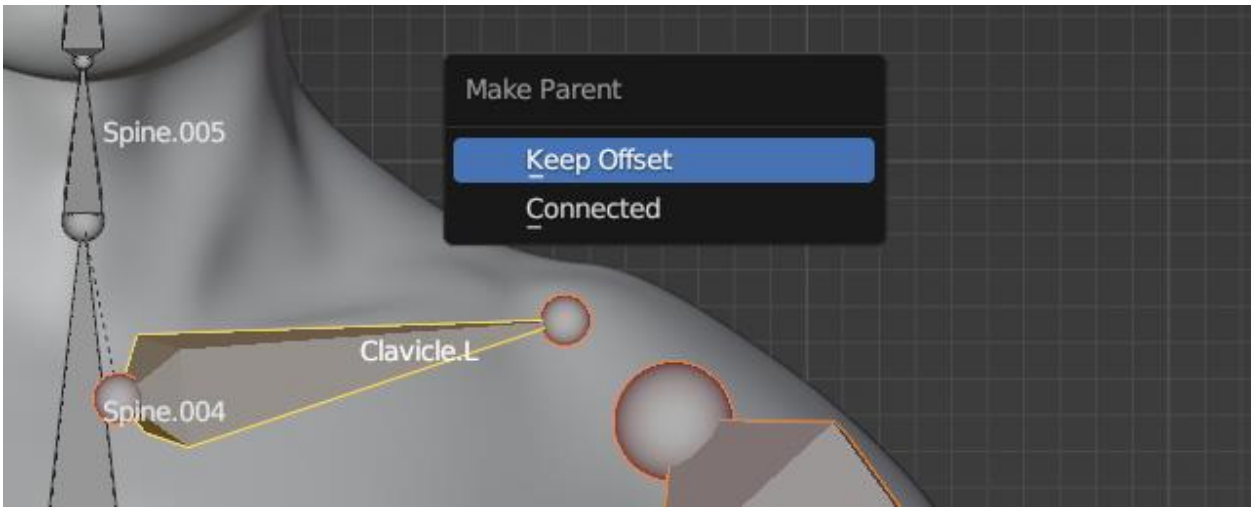


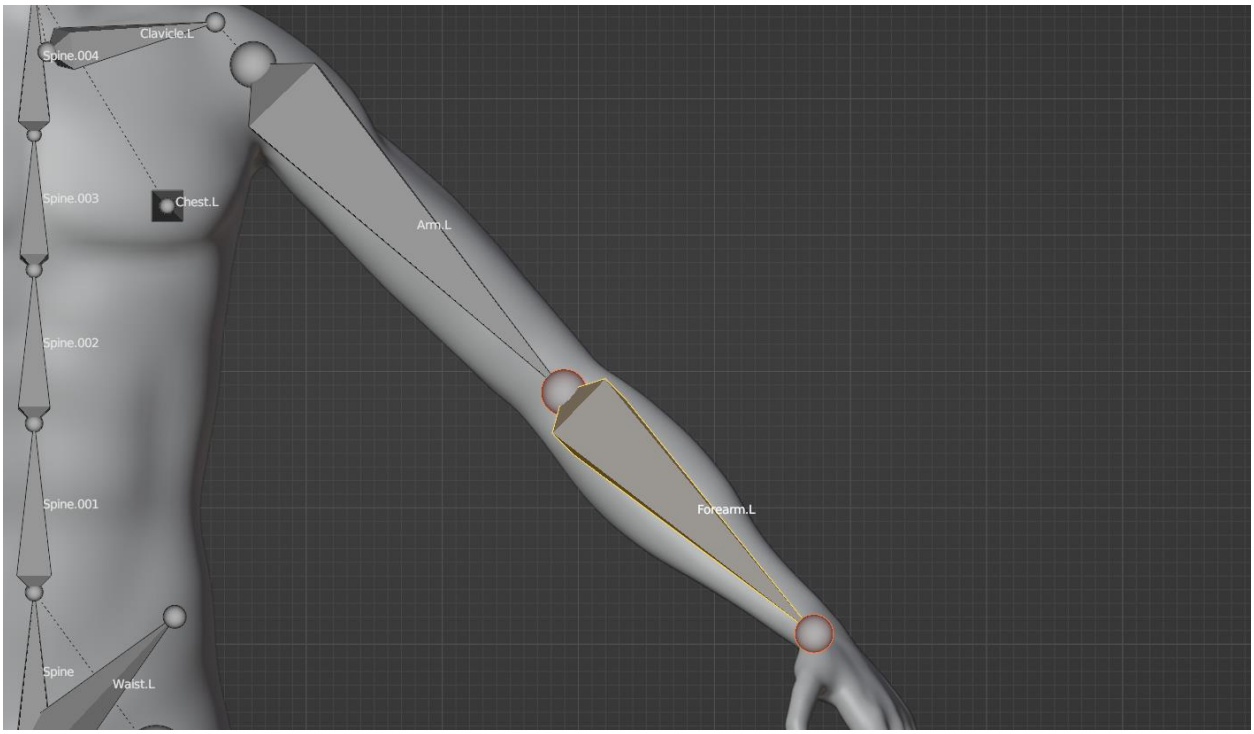


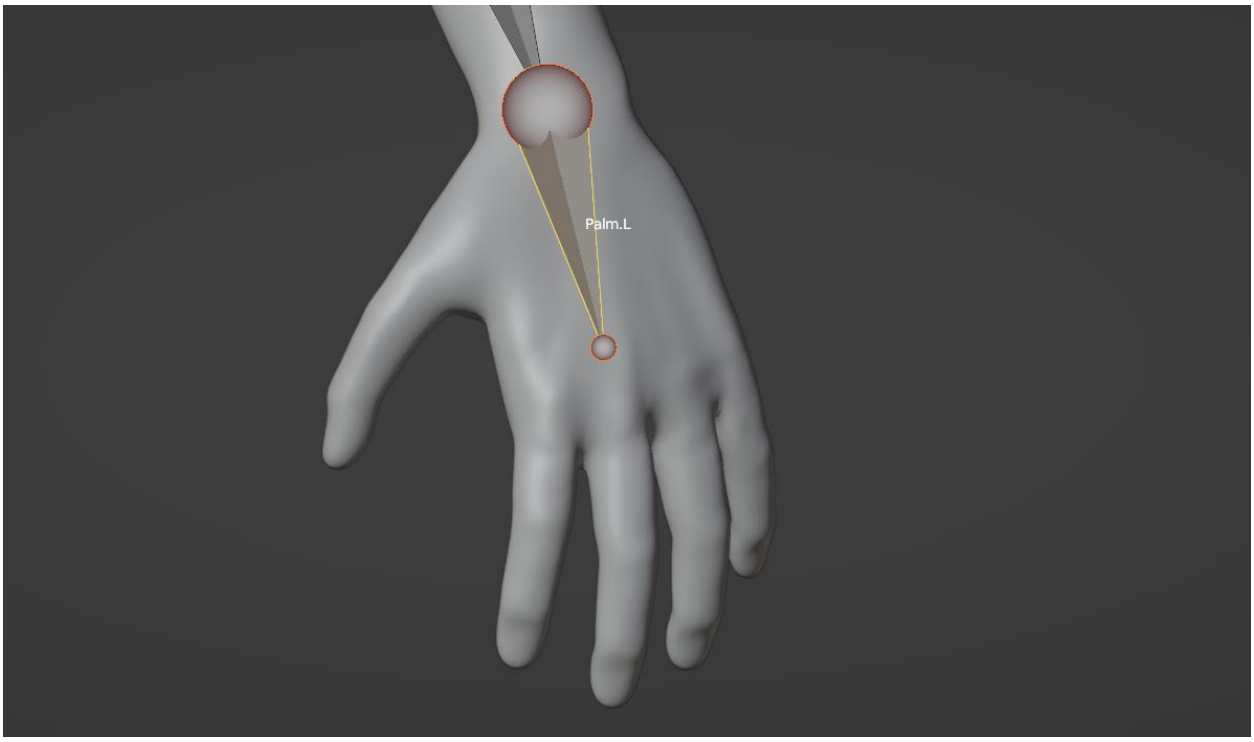

Clavicle.L
Transform
Head X
0.009847 m
Y
-0.042404 m
Z
1.5345 m
Tail X
0.13322 m
Y
0.012432 m
Z
1.5561 m
Roll
0°
Lock
Bendy Bones
Relations
Deform
Custom Properties

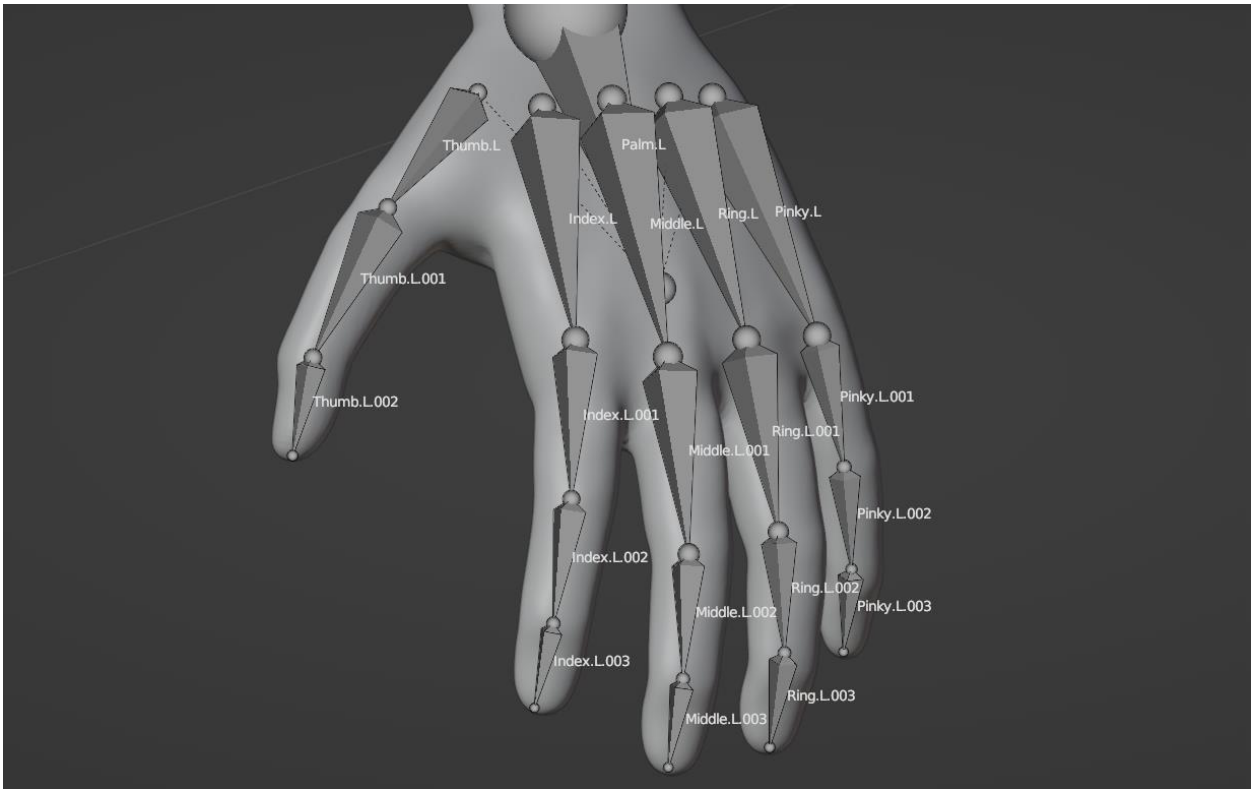

Spine.005
Clavicle.L
Spine.004
Spine.003
Chest.L
Clavicle.L
Spine.004
Chest.L
Spine.003

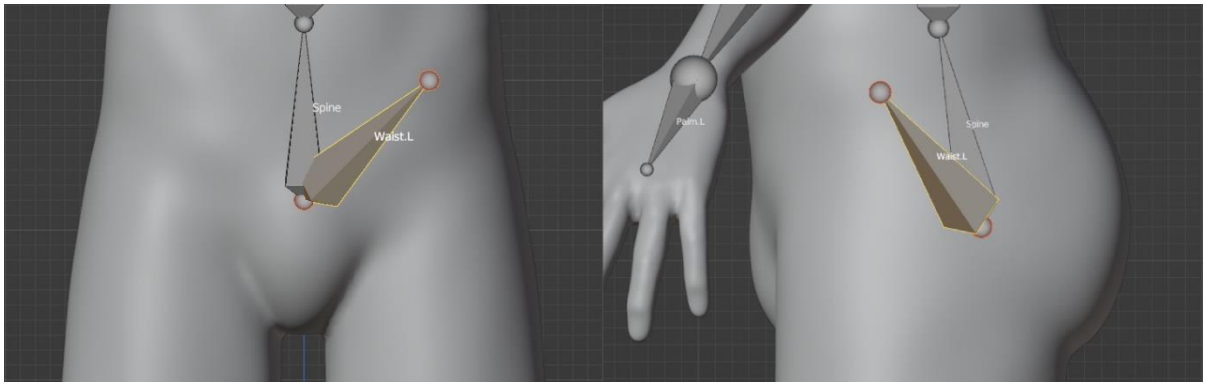

Spine.005
Clavicle.L
Spine.004
Spine.003
Chest.L
Arm.L
Spine.002

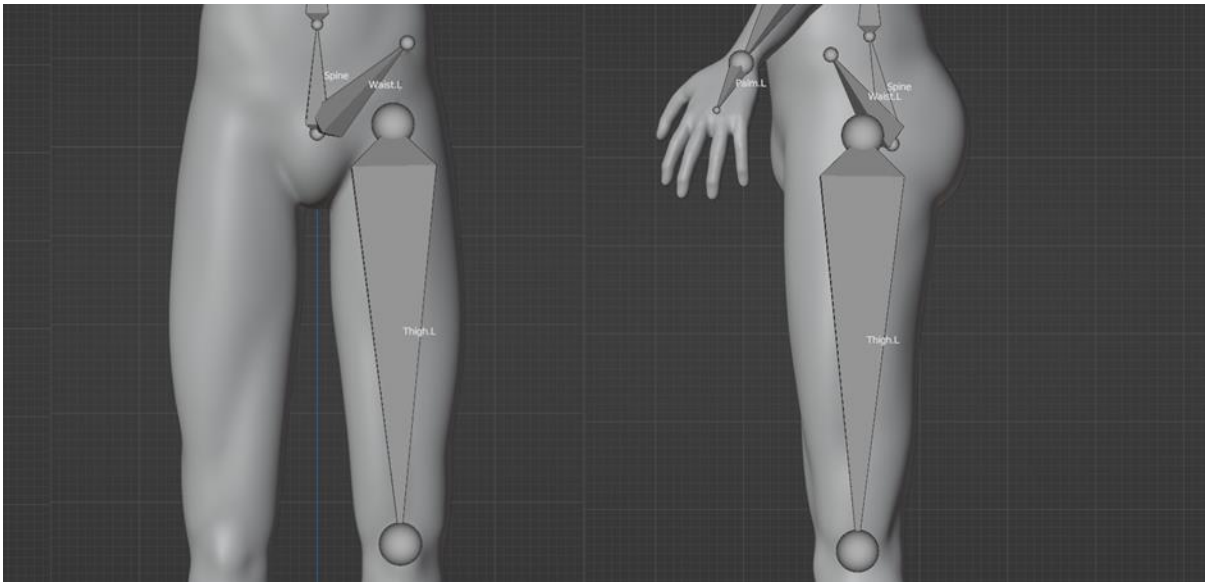

Make Parent
Keep Offset
Connected
Spine.005
Clavicle.L
Spine.004

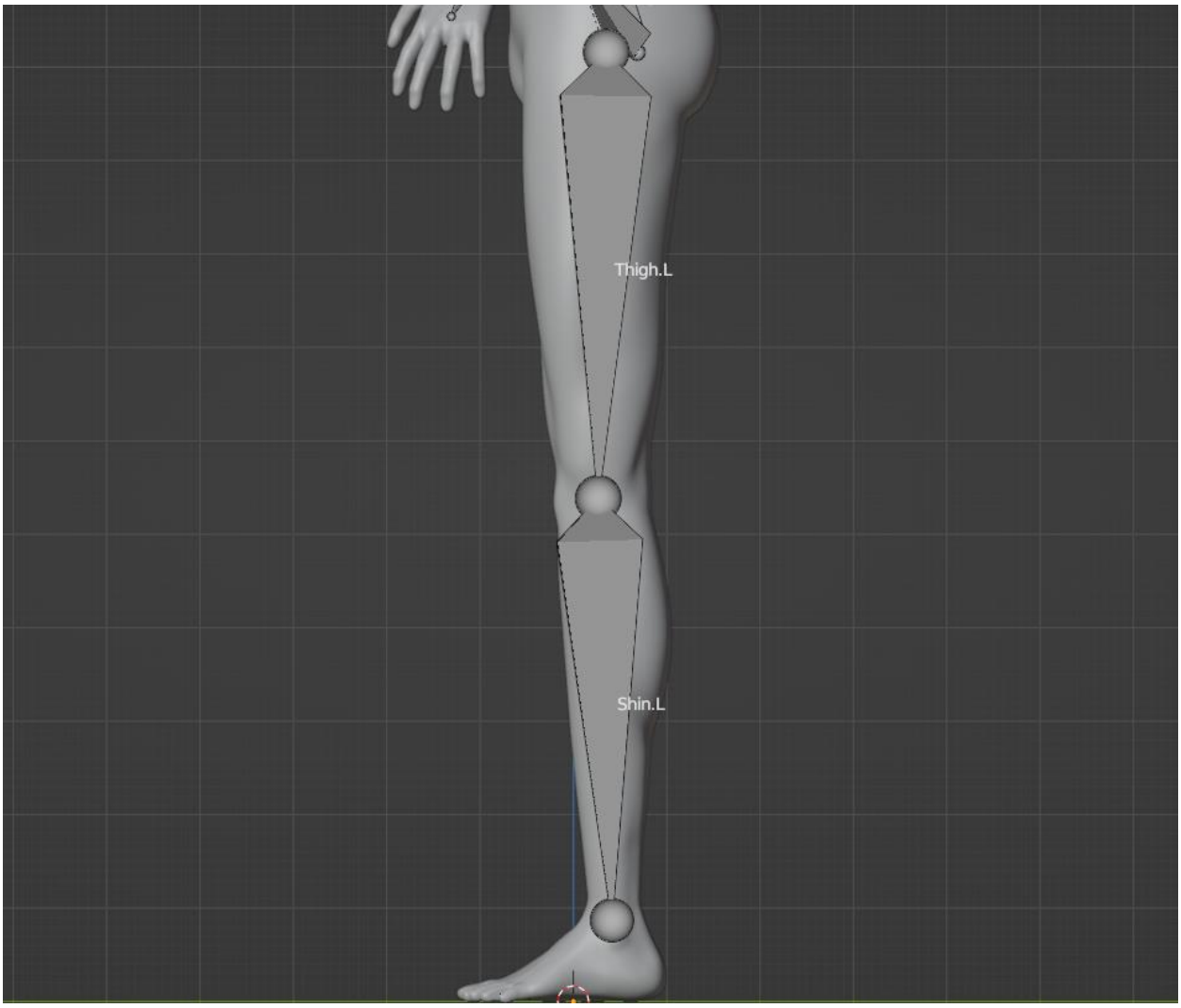

Clavicle.L
Spine.004
Spine.003
Chest.L
Arm.L
Spine.002
Spine.001
Forearm.L
Spine
Waist.L

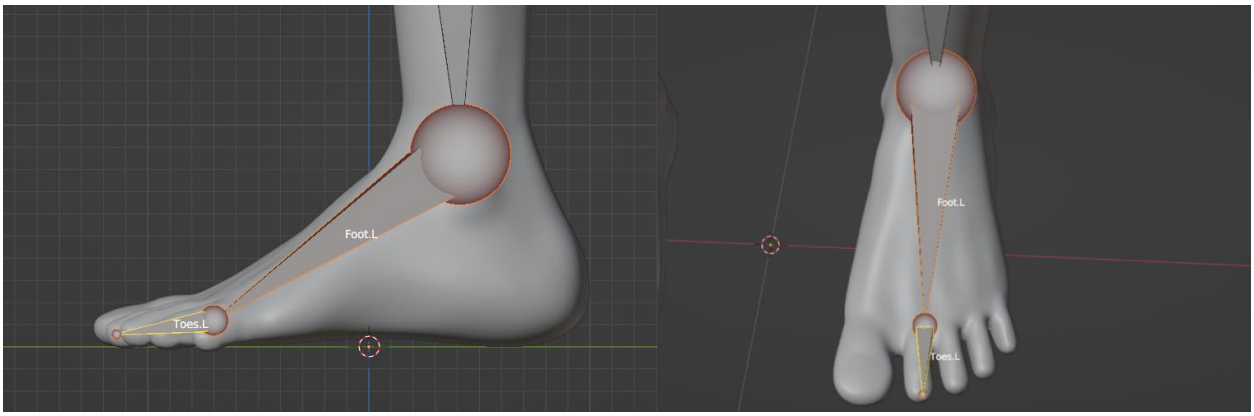

Palm.L

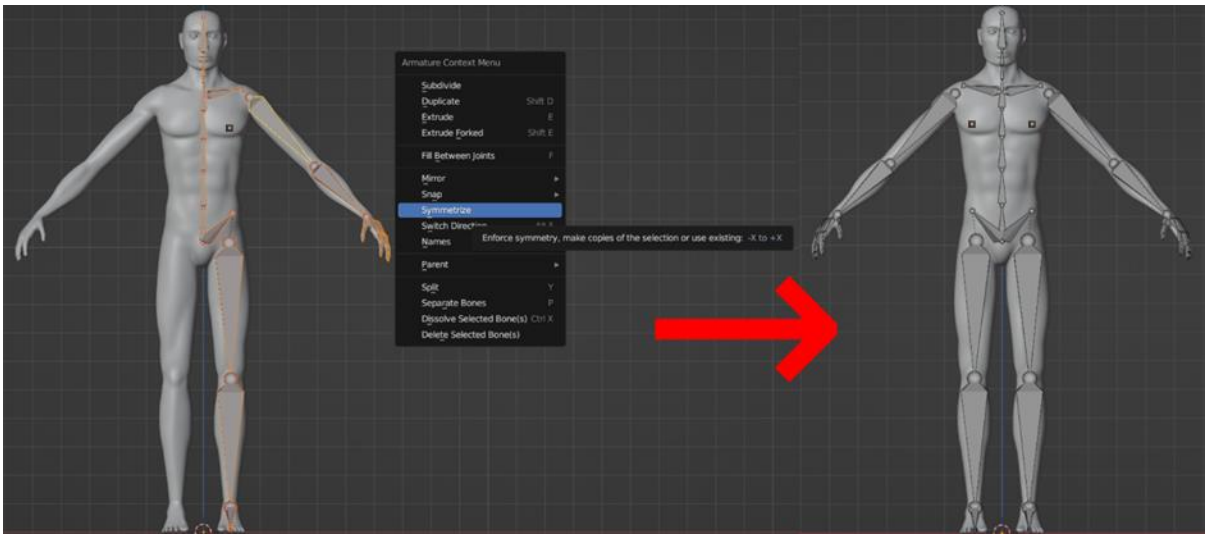

Thumb.L
Palm.L
Index.L
Middle.L
Ring.L
Pinky.L
Thumb.L.001
Thumb.L.002
Index.L.001
Middle.L.001
Ring.L.001
Pinky.L.001
Pinky.L.002
Index.L.002
Ring.L.002
Middle.L.002
Pinky.L.003
Index.L.003
Ring.L.003
Middle.L.003

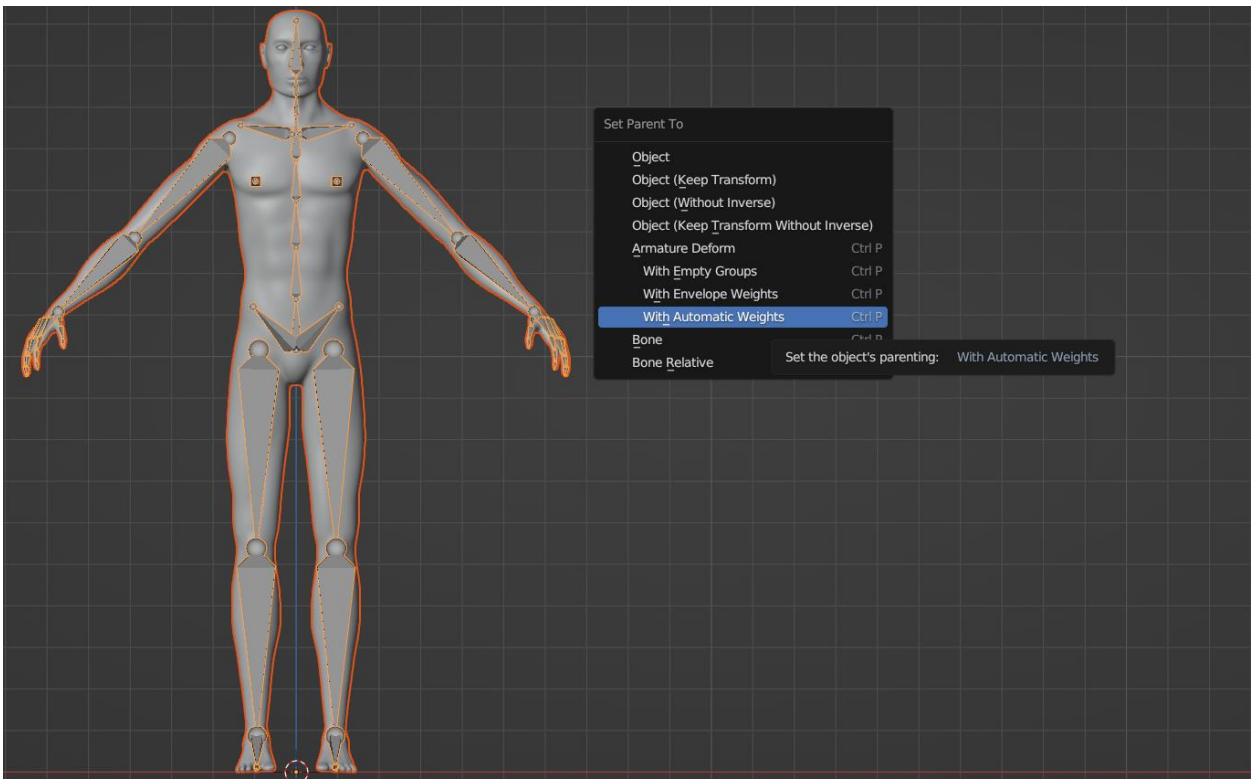

Spine
Waist.L
Palm.L
Spine
Waist.L

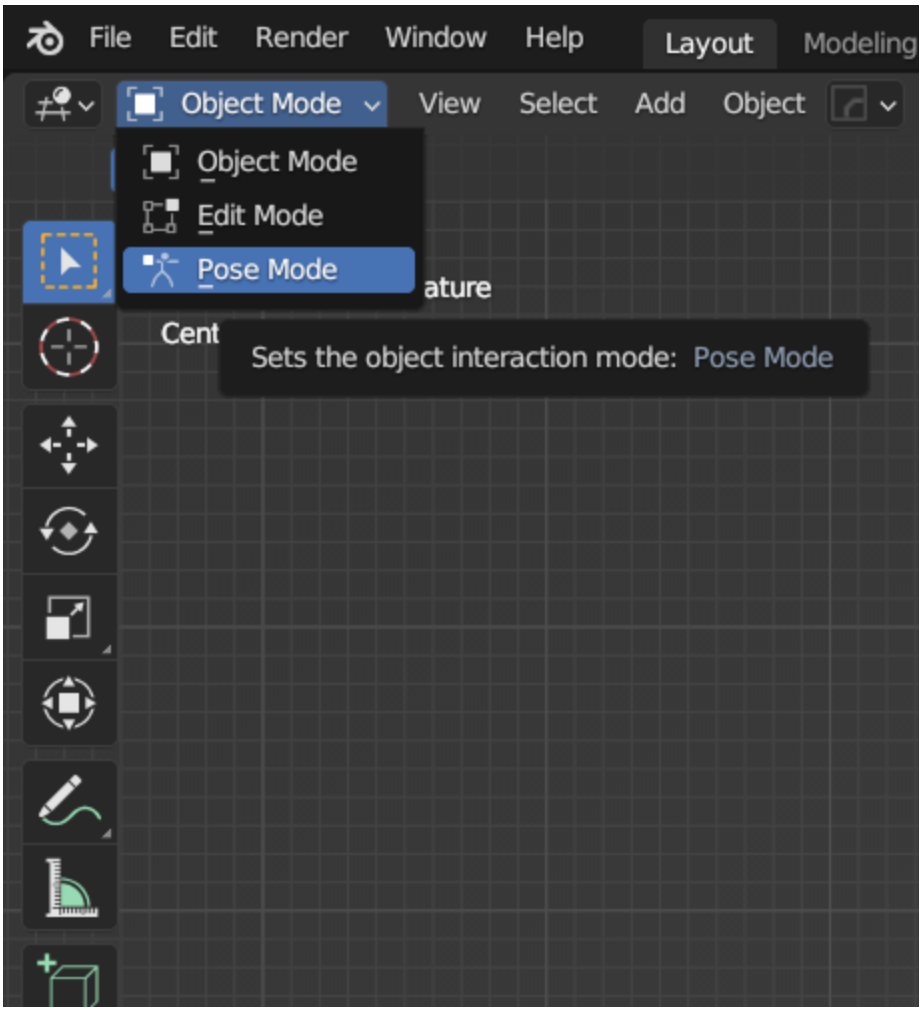

Spine
Waist.L
Thigh.L
Palm.L
Spine
Waist.L
Thigh.L

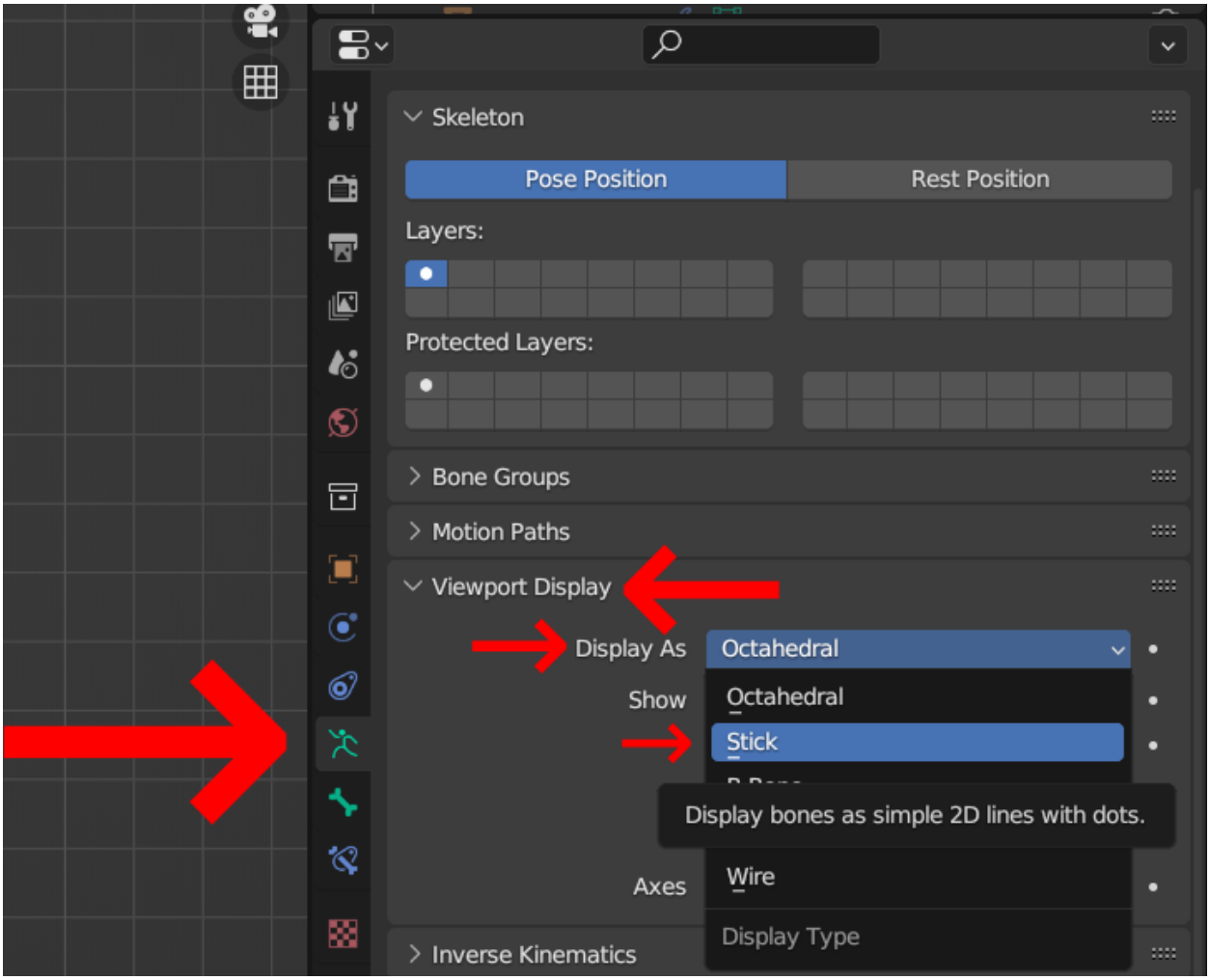

Thigh.L
Shin.L

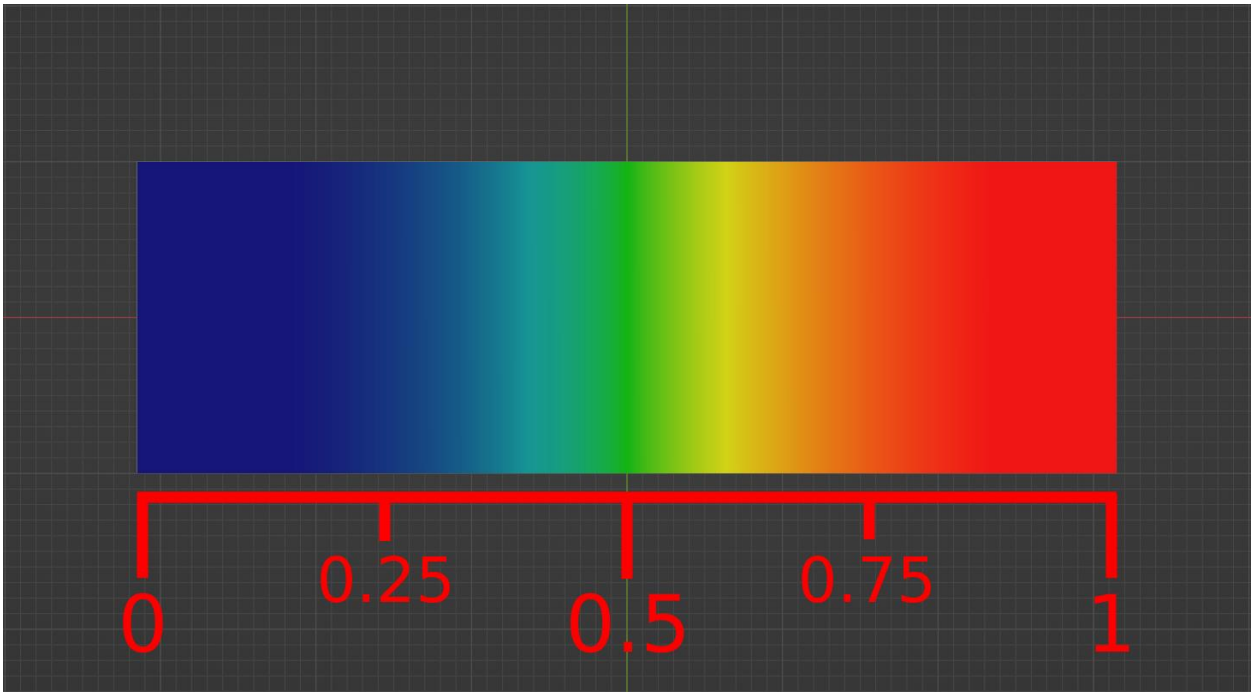

Foot.L
Toes.L
Foot.L
Toes.L

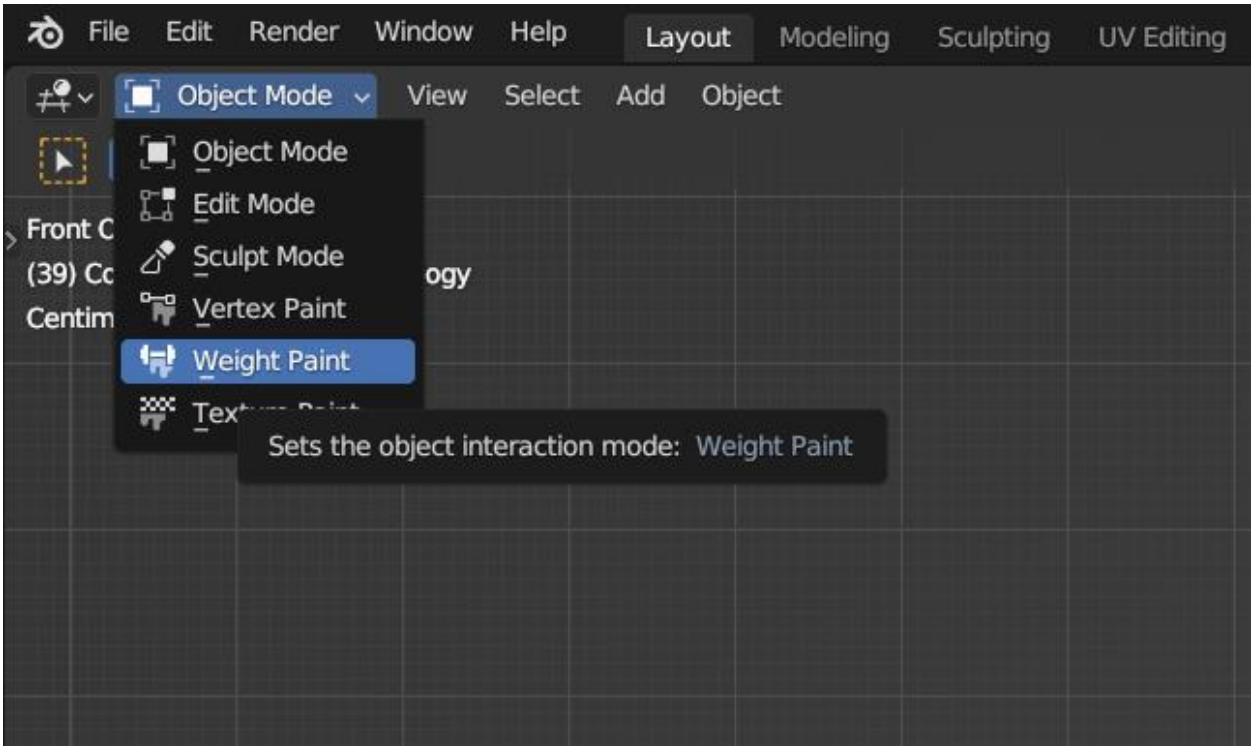

Armature Context Menu
Subdivide
Duplicate Shift D
Extrude E
Extrude Forked Shift E
Fill Between Joints F
Mirror
Snap
Symmetrize
Names
Enforce symmetry, make copies of the selection or use existing: -X to +X
Parent
Split Y
Separate Bones P
Dissolve Selected Bone(s) Ctrl X
Delete Selected Bone(s)

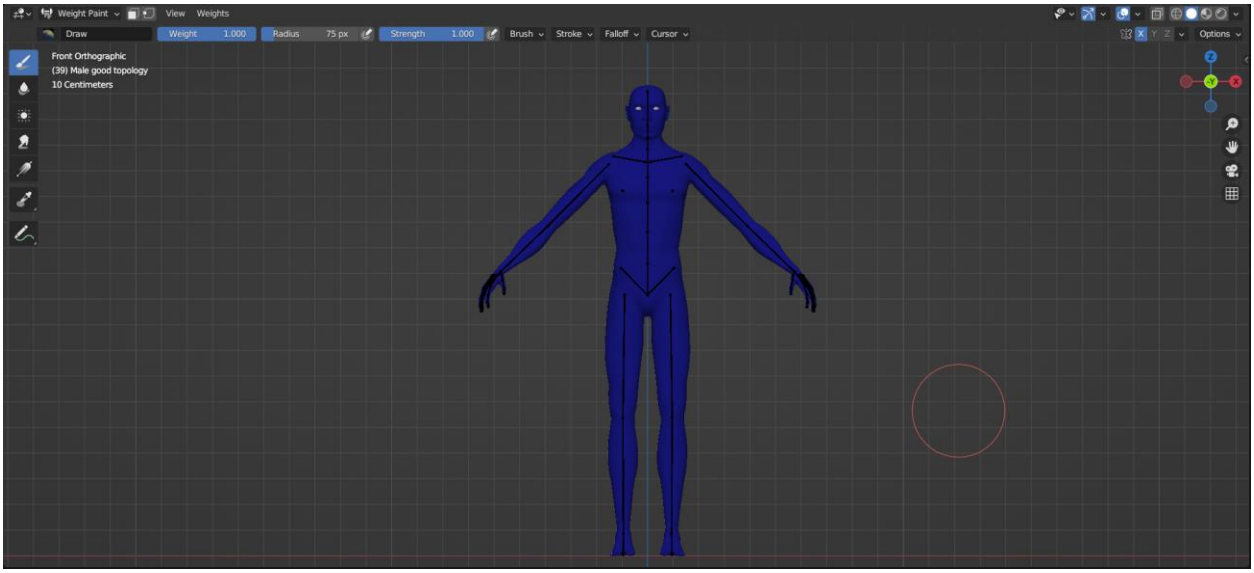

Set Parent To
Object
Object (Keep Transform)
Object (Without Inverse)
Object (Keep Transform Without Inverse)
Armature Deform Ctrl P
With Empty Groups Ctrl P
With Envelope Weights Ctrl P
With Automatic Weights Ctrl P
Bone
Bone Relative
Set the object's parenting: With Automatic Weights

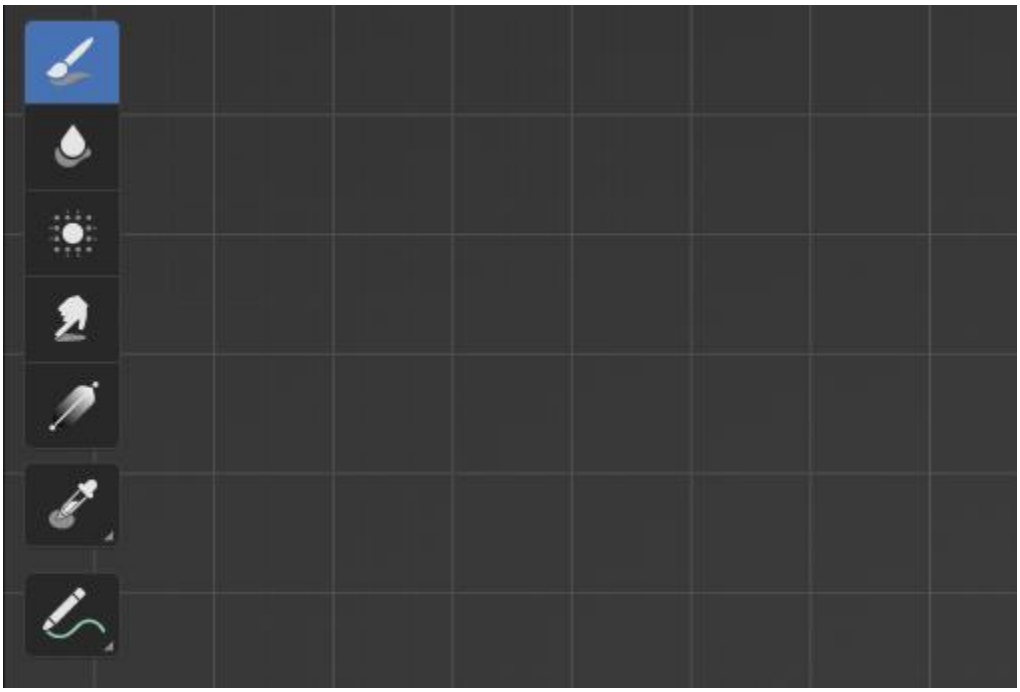

File
Edit
Render
Window
Help
Layout
Modeling
Object Mode
View
Select
Add
Object
Object Mode
Edit Mode
Pose Mode
ature
Cent
Sets the object interaction mode: Pose Mode

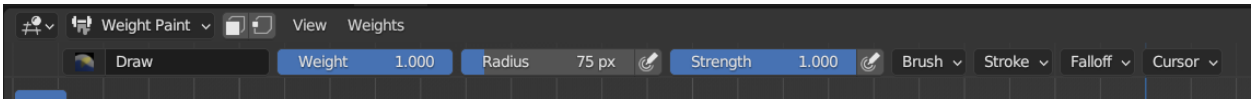

Skeleton
Pose Position
Rest Position
Layers:
Protected Layers:
Bone Groups
Motion Paths
Viewport Display
Display As
Octahedral
Show
Octahedral
Stick
Display bones as simple 2D lines with dots.
Axes
Wire
Display Type
Inverse Kinematics

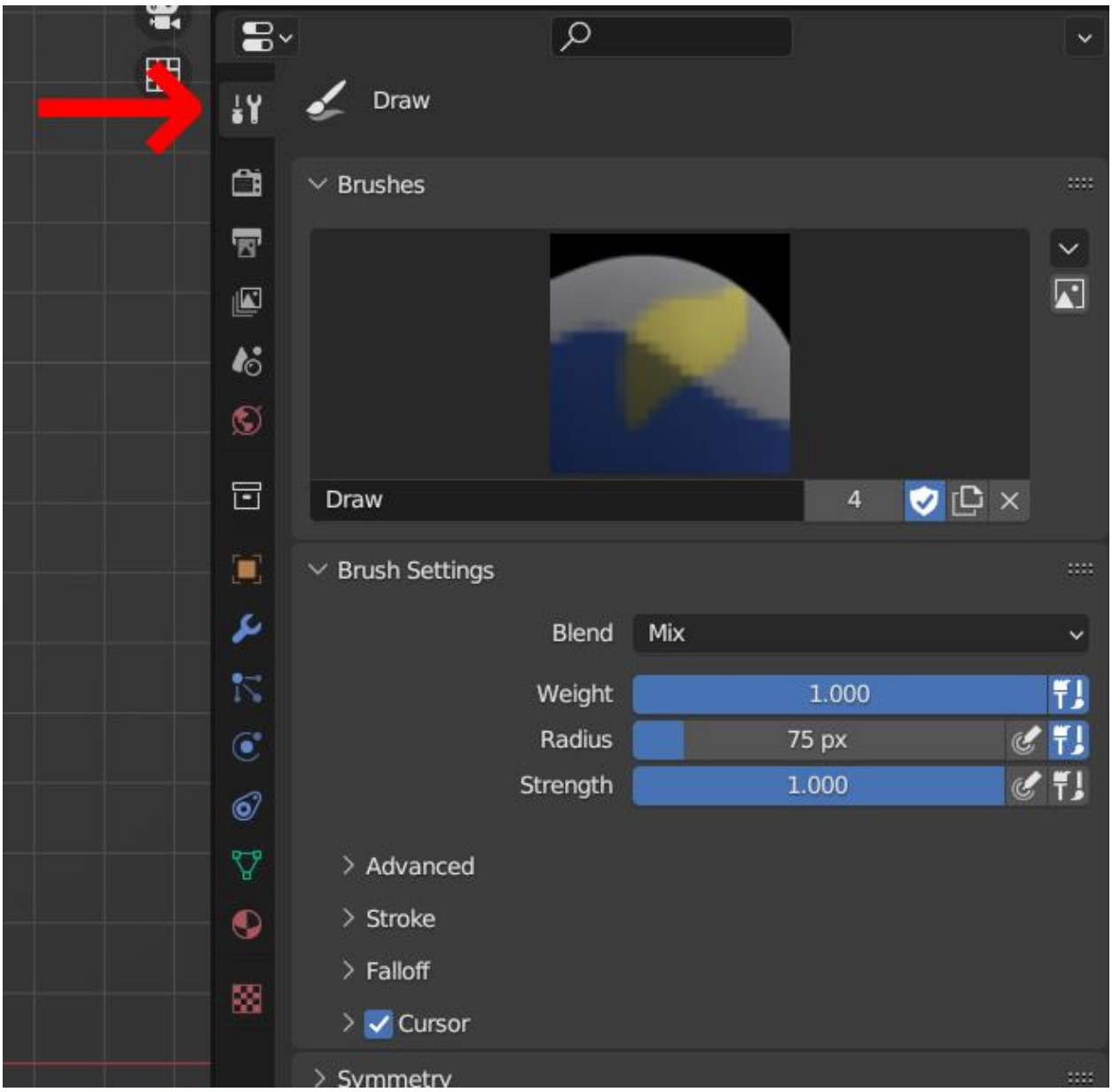

0
0.25
0.5
0.75
1

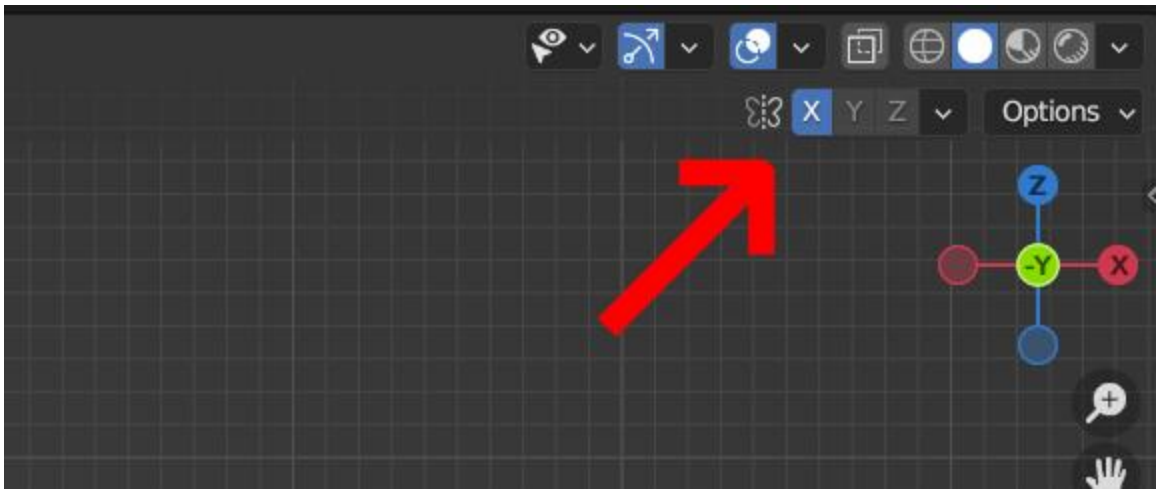

File
Edit
Render
Window
Help
Layout
Modeling
Sculpting
UV Editing
Object Mode
View
Select
Add
Object
Object Mode
Edit Mode
Sculpt Mode
Vertex Paint
Weight Paint
Sets the object interaction mode: Weight Paint

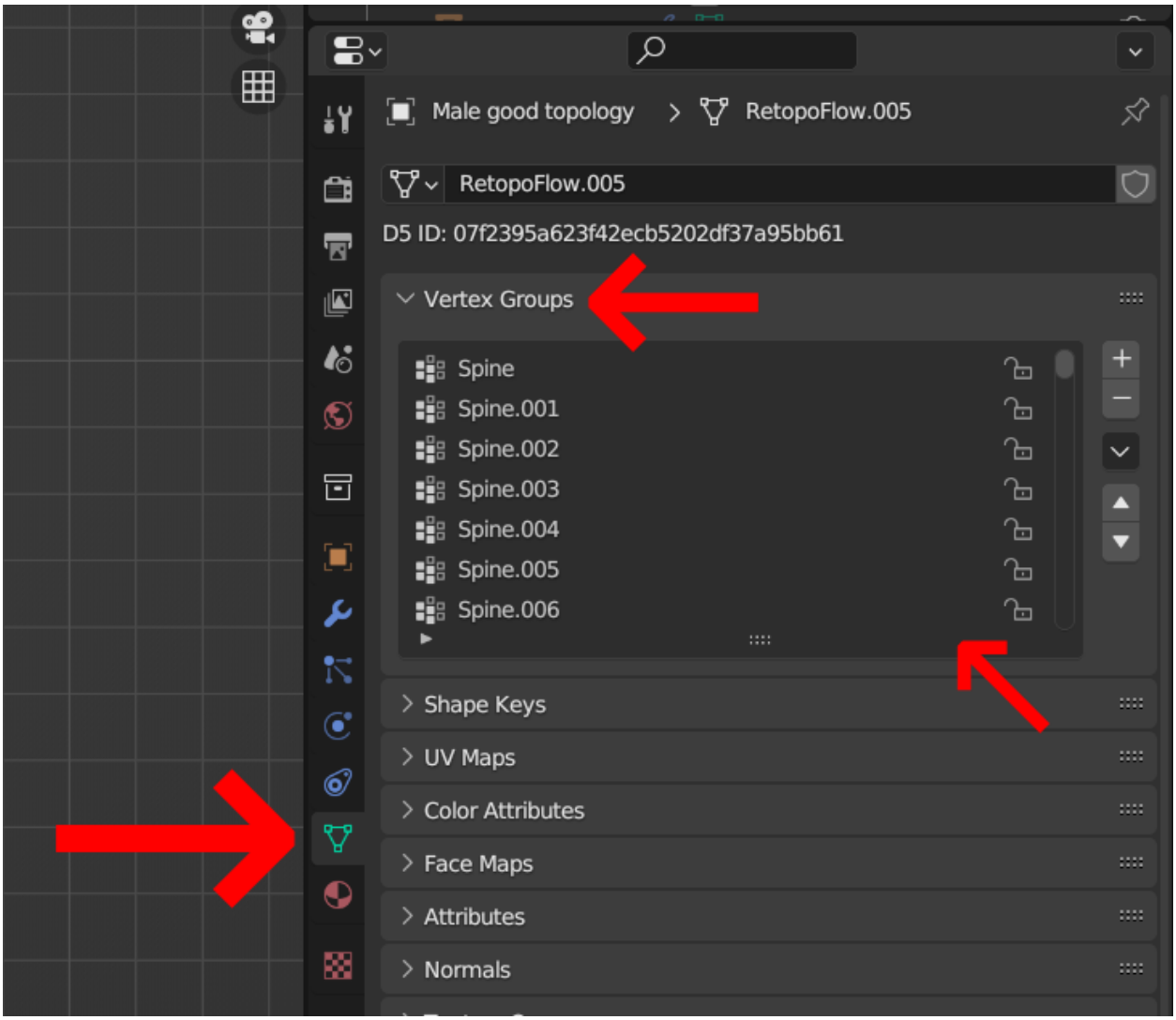

Weight Paint
View
Weights
Draw
Weight 1.000
Radius 75 px
Strength 1.000
Brush
Stroke
Falloff
Cursor
Options
Front Orthographic
(39) Male good topology
10 Centimeters

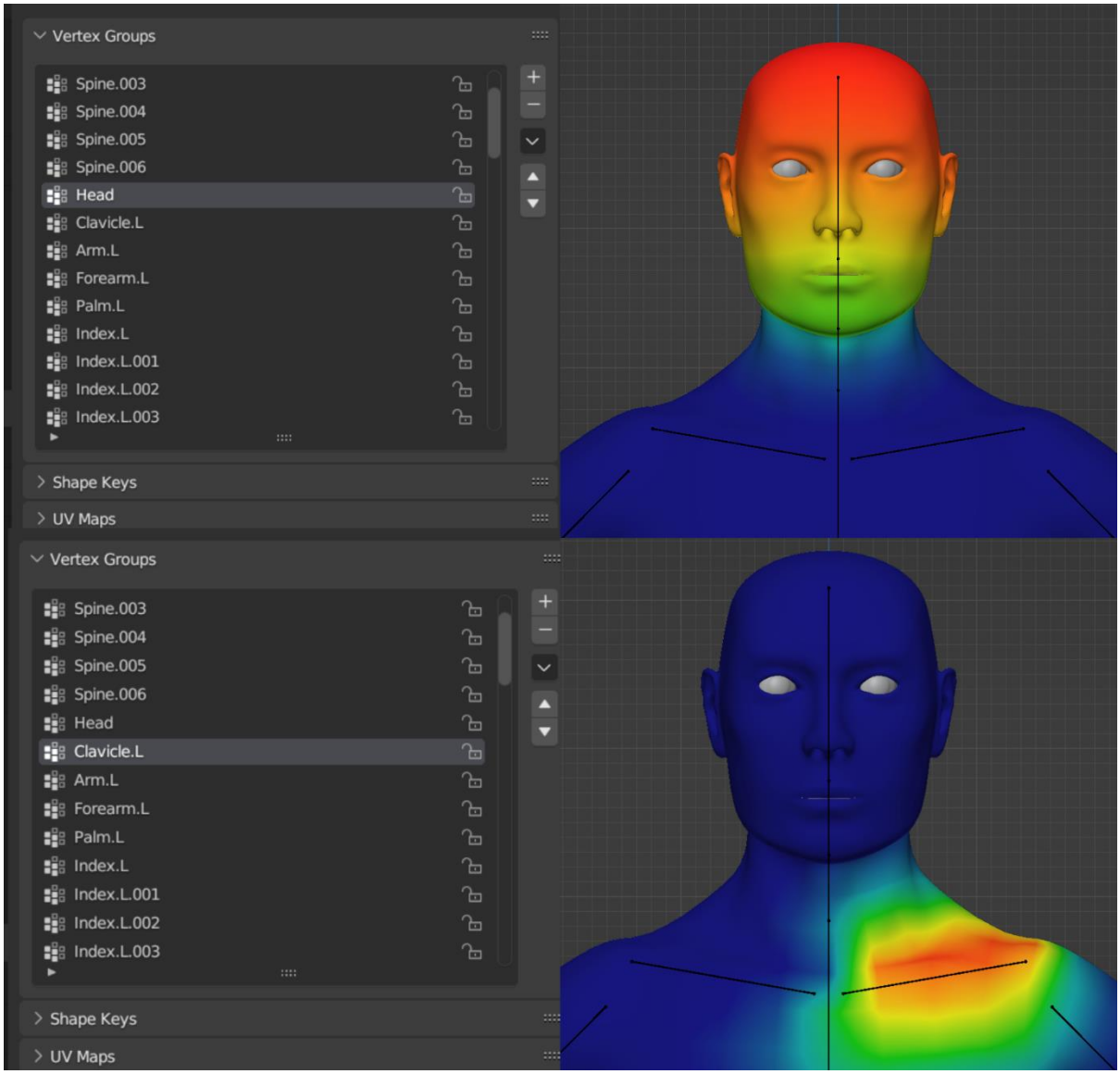


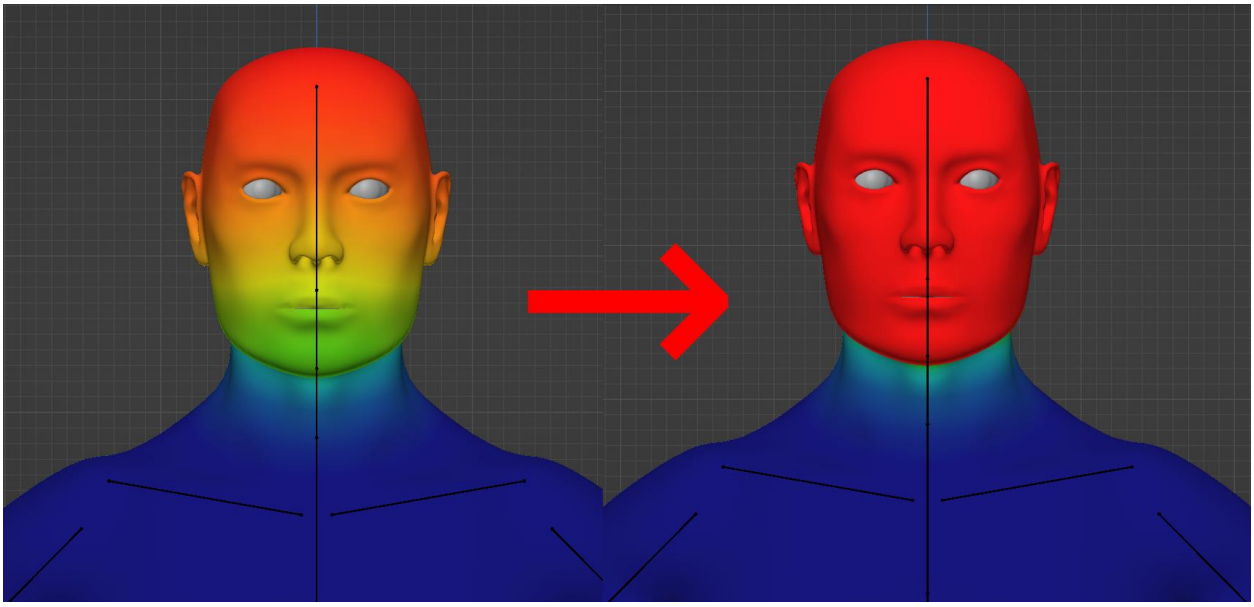

Weight Paint
View
Weights
Draw
Weight 1.000
Radius 75 px
Strength 1.000
Brush
Stroke
Falloff
Cursor

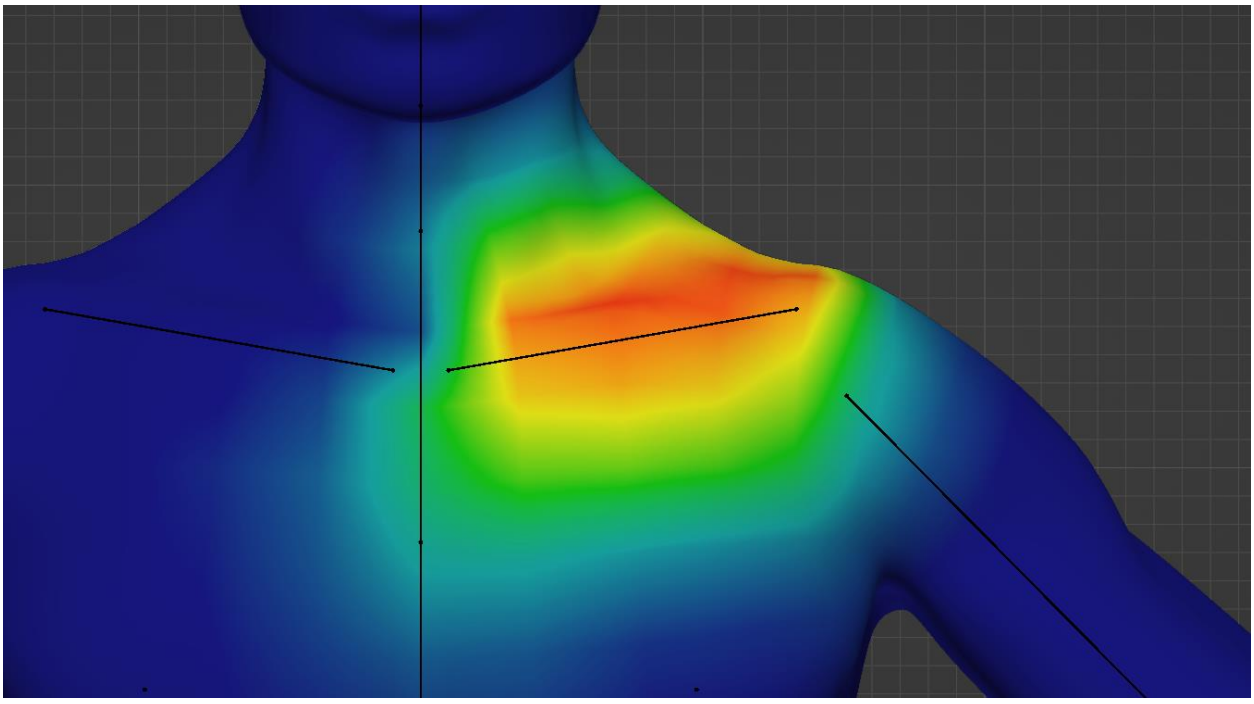

Draw
Brushes
Draw
4
Brush Settings
Blend
Mix
Weight
1.000
Radius
75 px
Strength
1.000
Advanced
Stroke
Falloff
Cursor
Symmetry

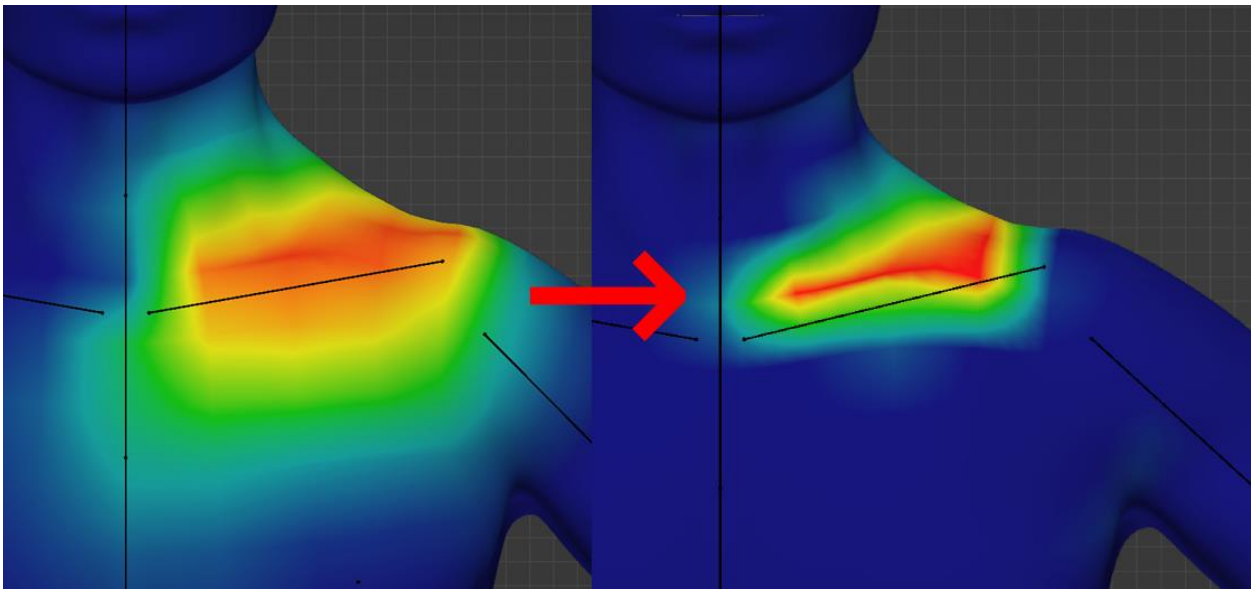

X
Y
Z
Options
Z
-Y
X

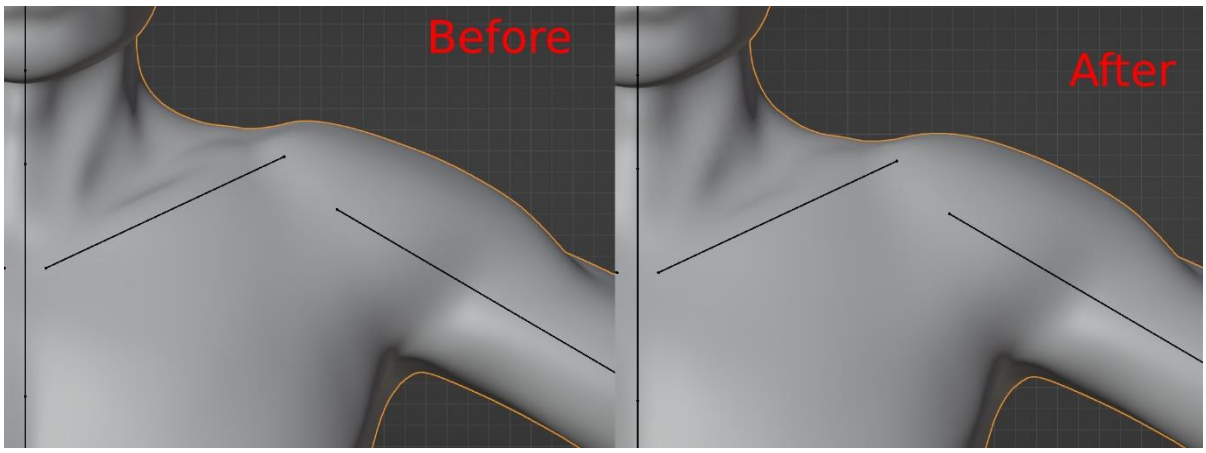

Male good topology
RetopoFlow.005
RetopoFlow.005
D5 ID: 07f2395a623f42ecb5202df37a95bb61
Vertex Groups
Spine
Spine.001
Spine.002
Spine.003
Spine.004
Spine.005
Spine.006
Shape Keys
UV Maps
Color Attributes
Face Maps
Attributes
Normals

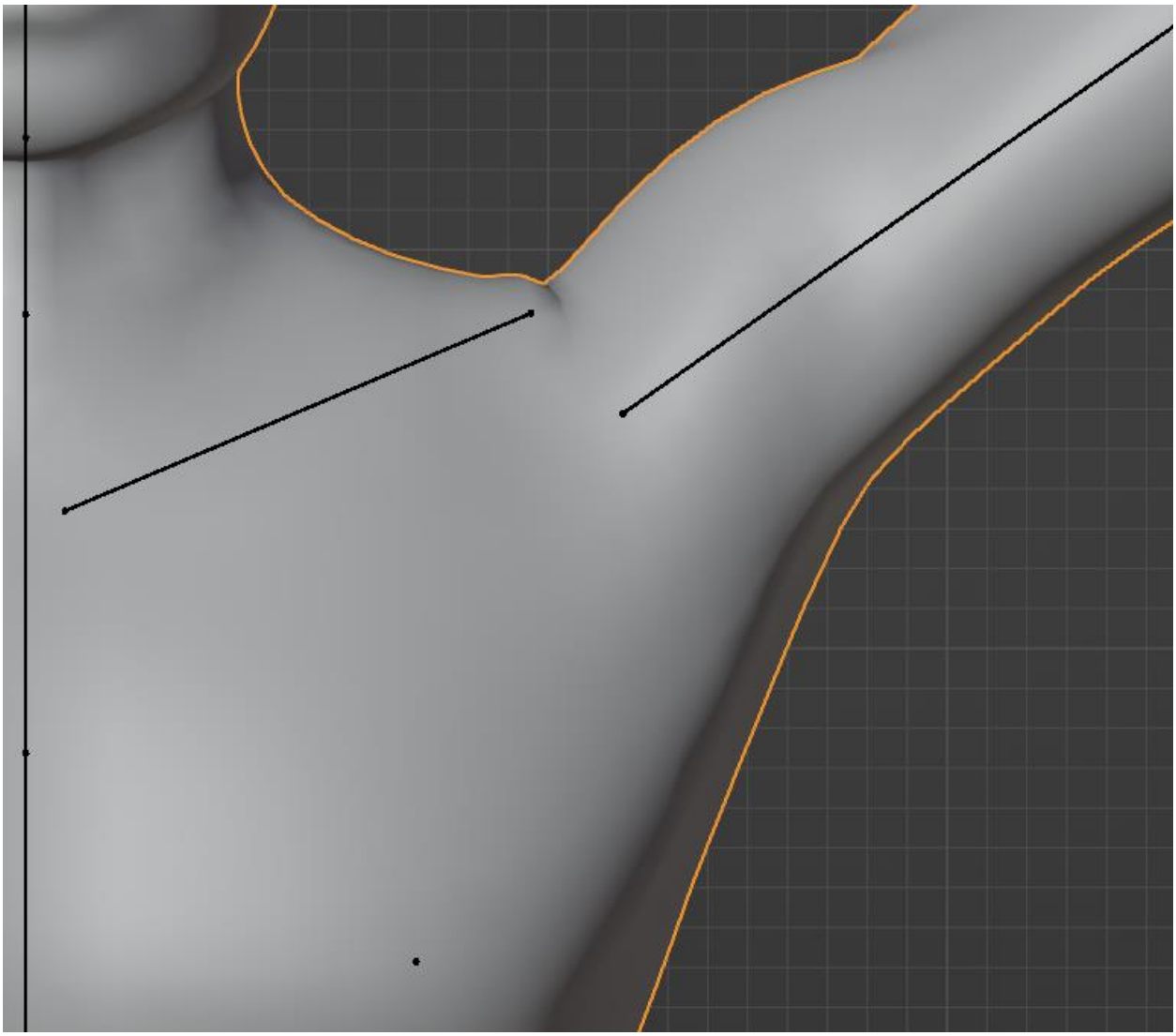

Vertex Groups
Spine.003
Spine.004
Spine.005
Spine.006
Head
Clavicle.L
Arm.L
Forearm.L
Palm.L
Index.L
Index.L.001
Index.L.002
Index.L.003
Shape Keys
UV Maps
Vertex Groups
Spine.003
Spine.004
Spine.005
Spine.006
Head
Clavicle.L
Arm.L
Forearm.L
Palm.L
Index.L
Index.L.001
Index.L.002
Index.L.003
Shape Keys
UV Maps

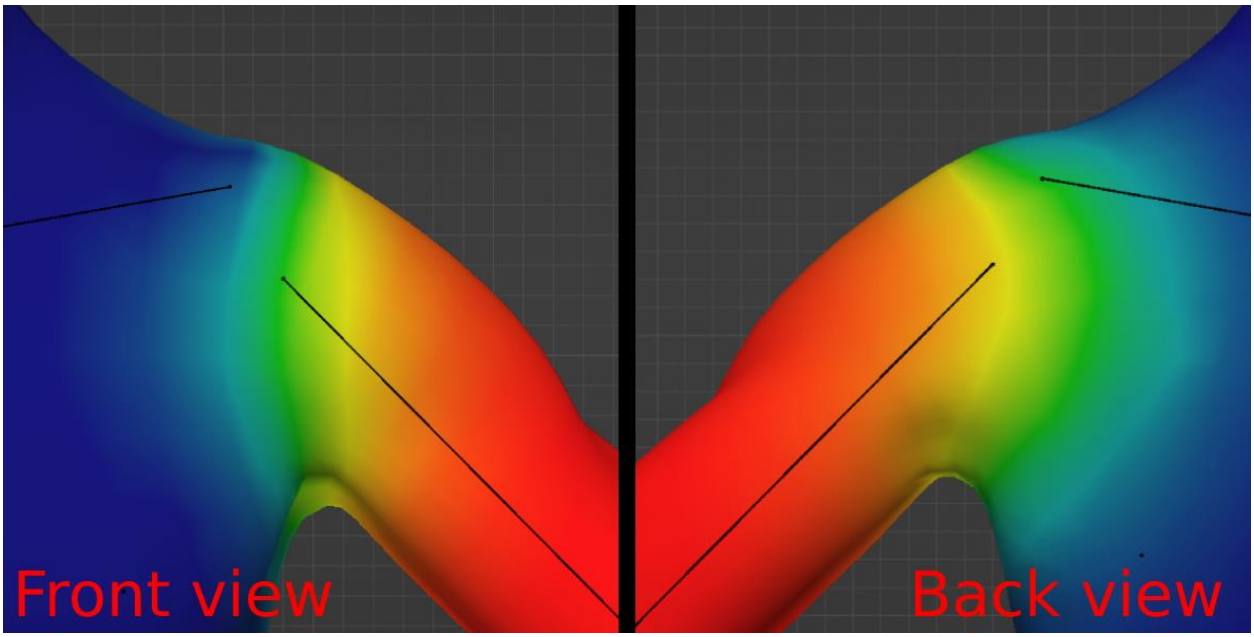


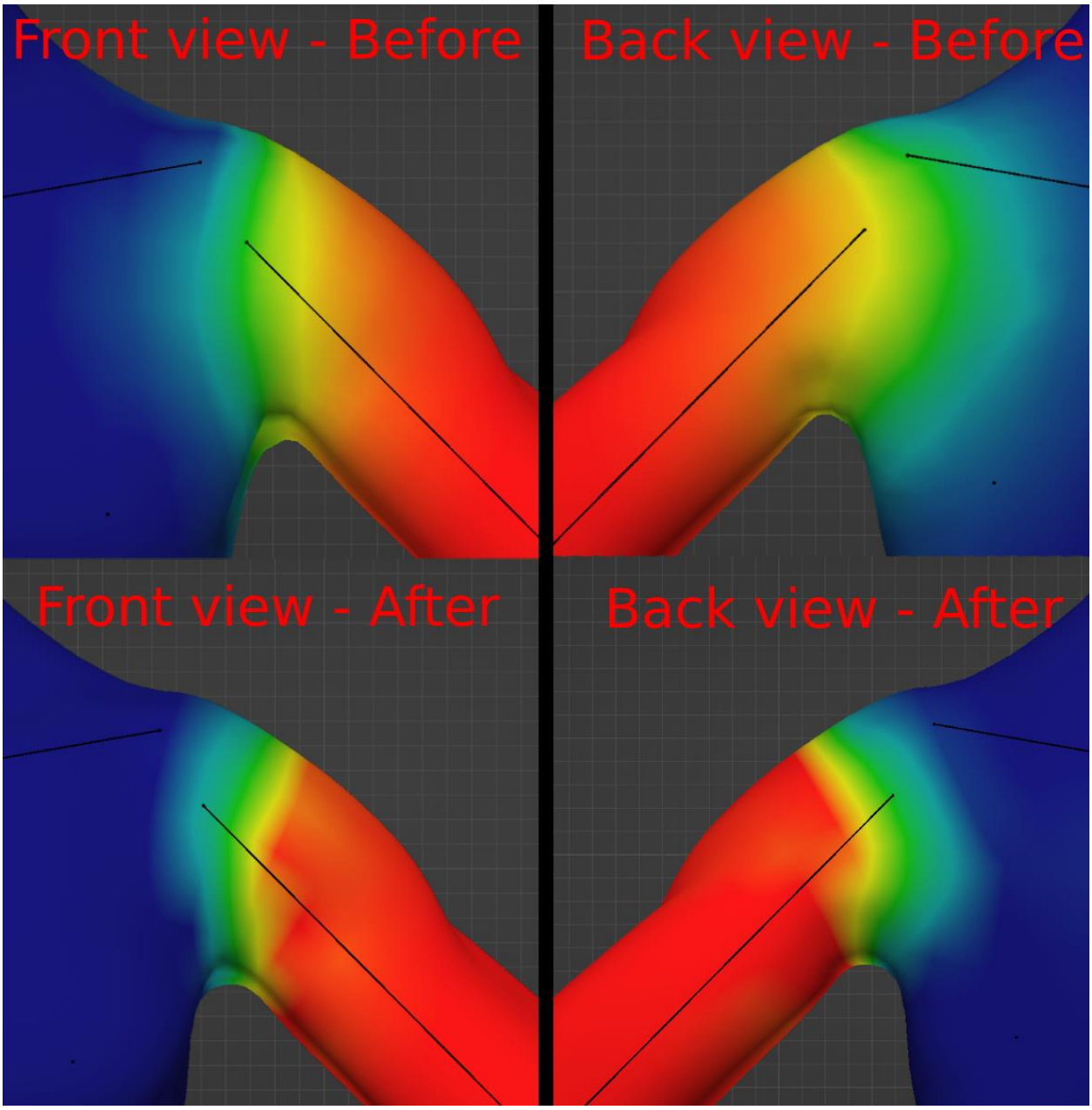


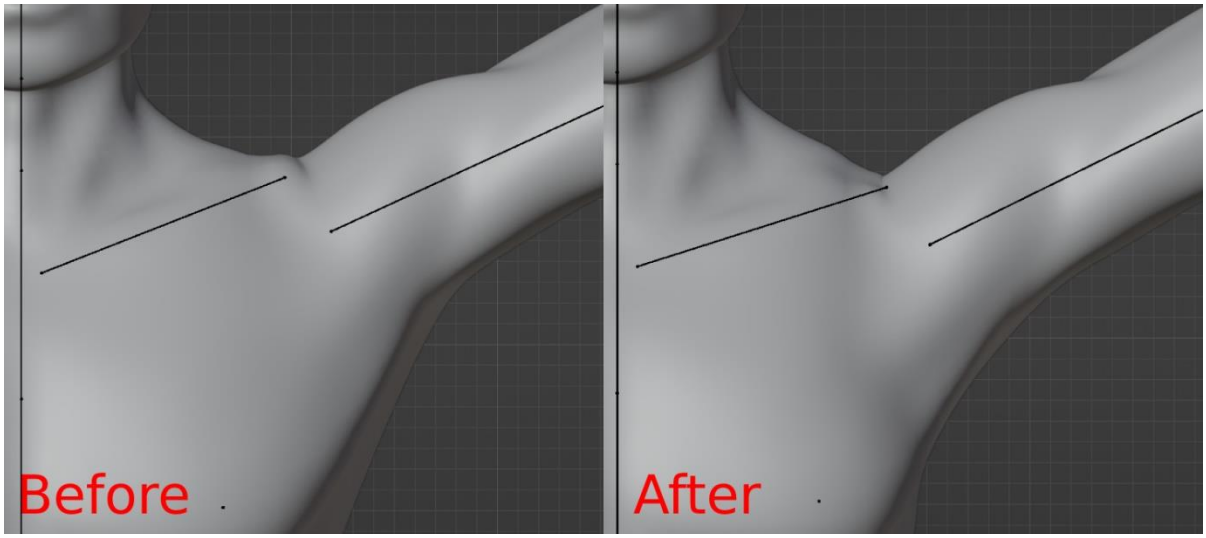


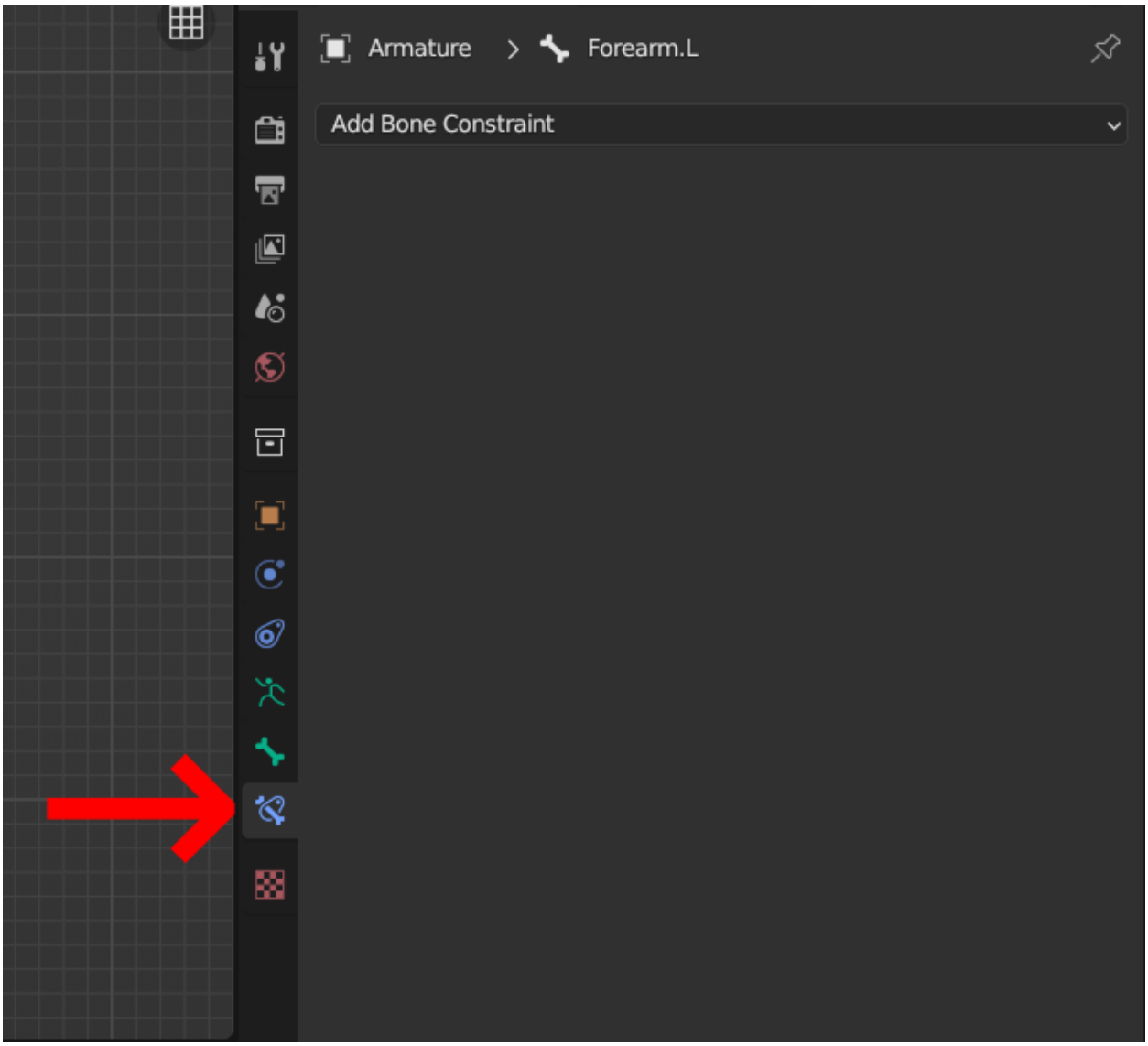

Before
After

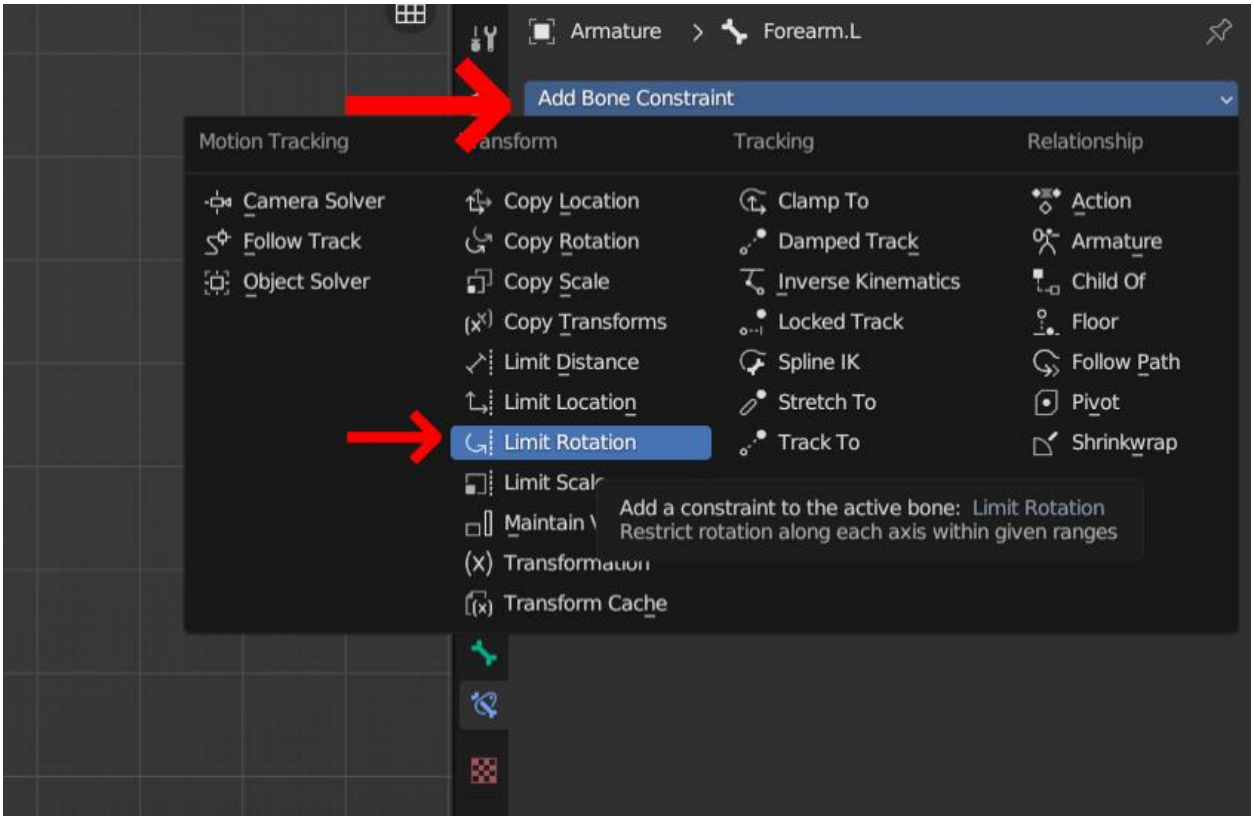


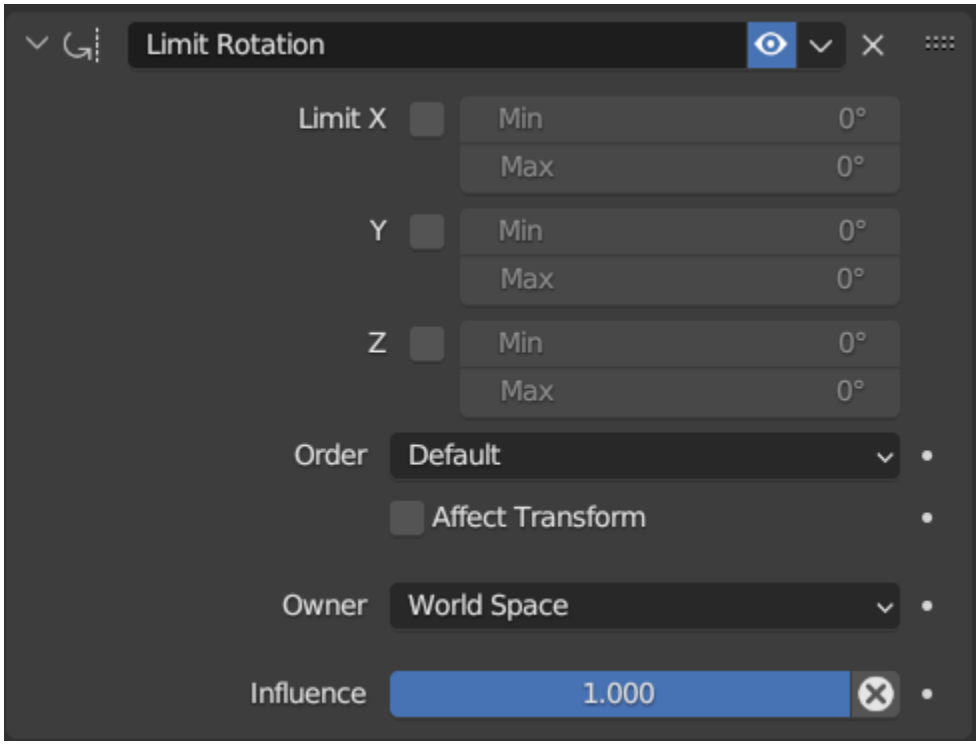

Front view
Back view

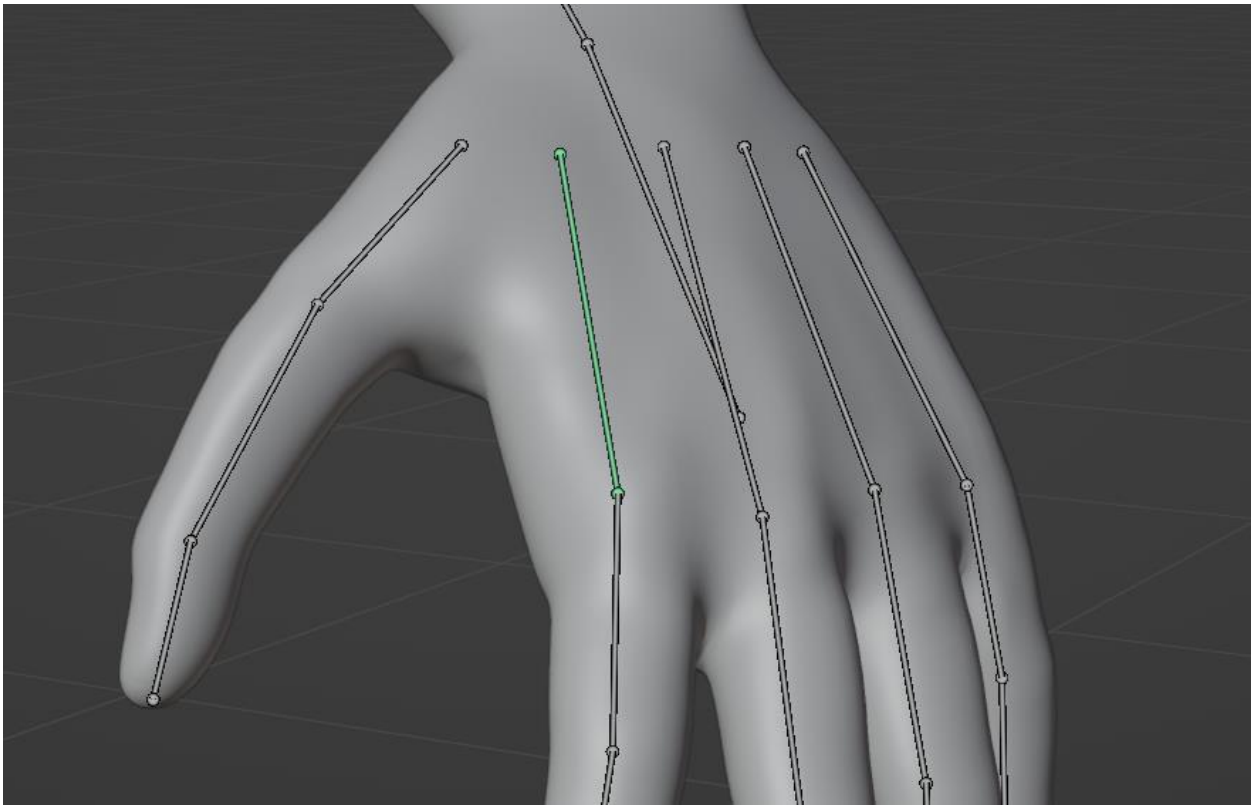

Front view - Before
Back view - Before
Front view - After
Back view - After

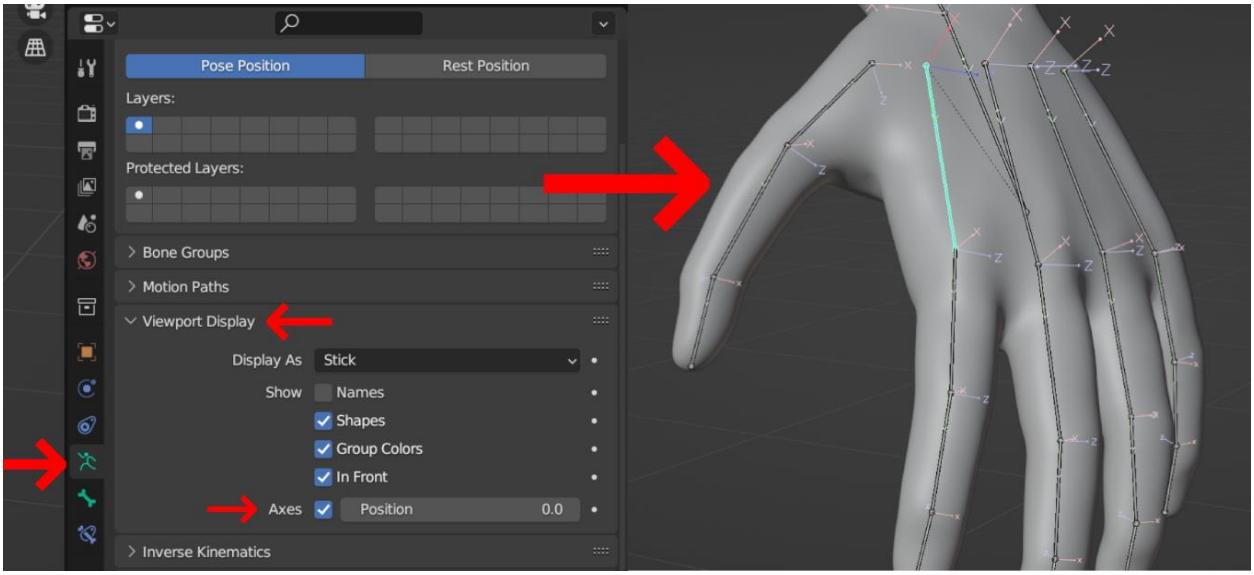

Before
After

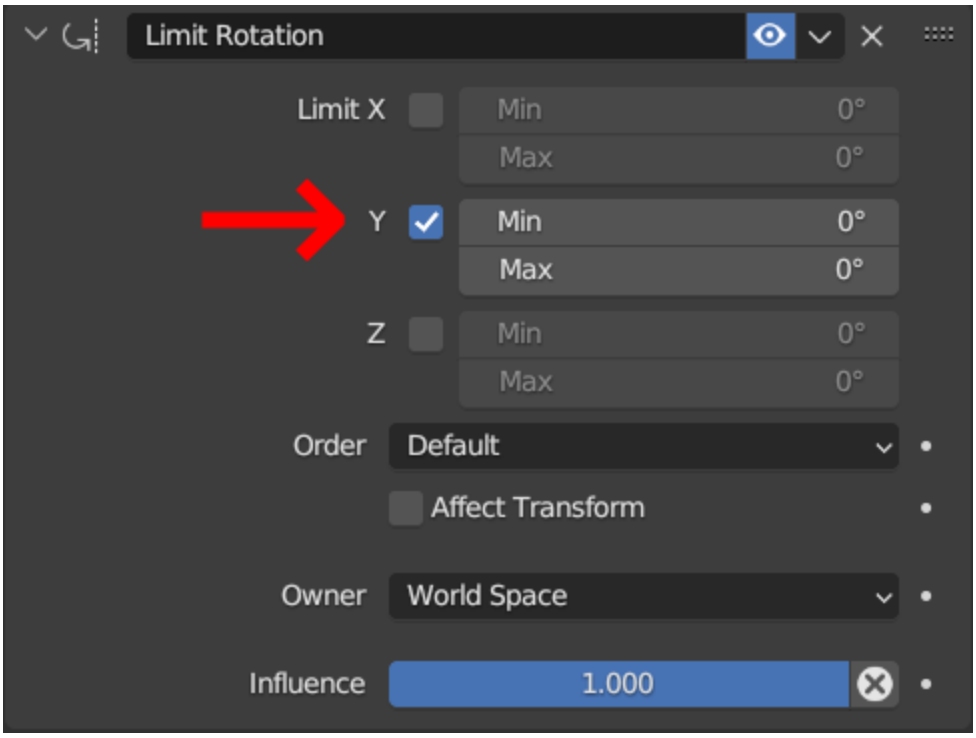

Armature
Forearm.L
Add Bone Constraint

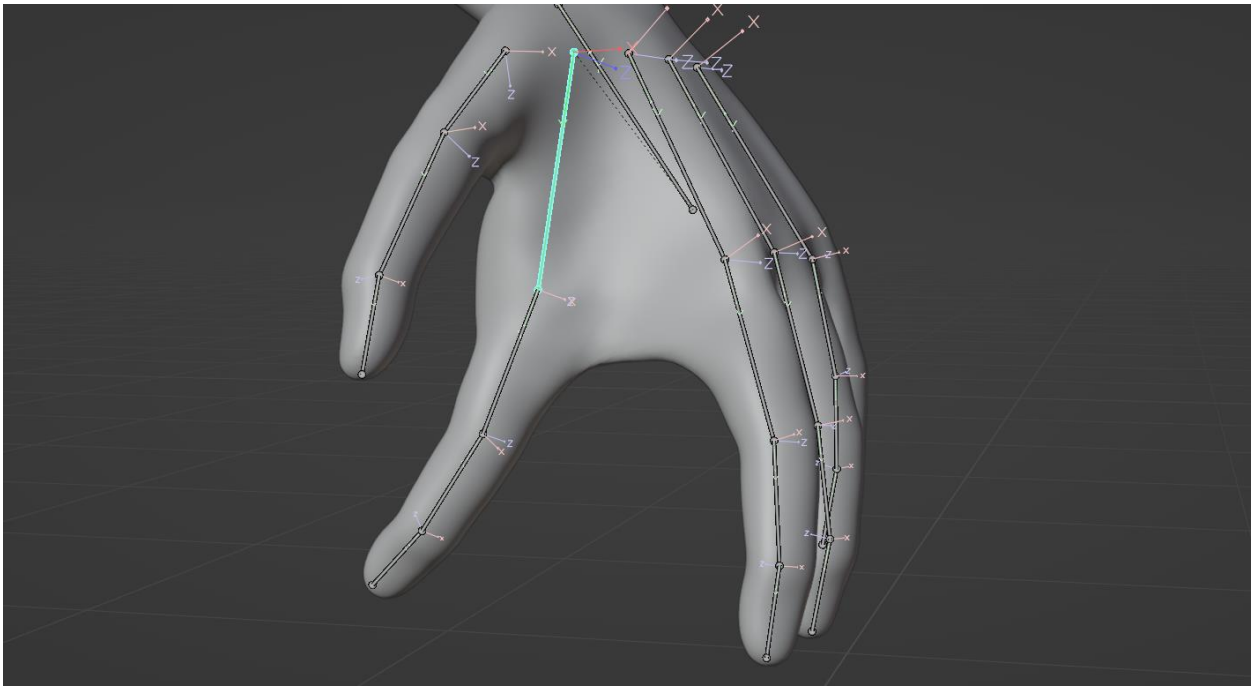

Armature
Forearm.L
Add Bone Constraint
Motion Tracking
Tracking
Relationship
Camera Solver
Follow Track
Object Solver
Copy Location
Copy Rotation
Copy Scale
Copy Transforms
Limit Distance
Limit Location
Limit Rotation
Transform Cache
Clamp To
Damped Track
Inverse Kinematics
Locked Track
Spline IK
Stretch To
Track To
Action
Armature
Child Of
Floor
Follow Path
Pivot
Shrinkwrap
Add a constraint to the active bone: Limit Rotation
Restrict rotation along each axis within given ranges

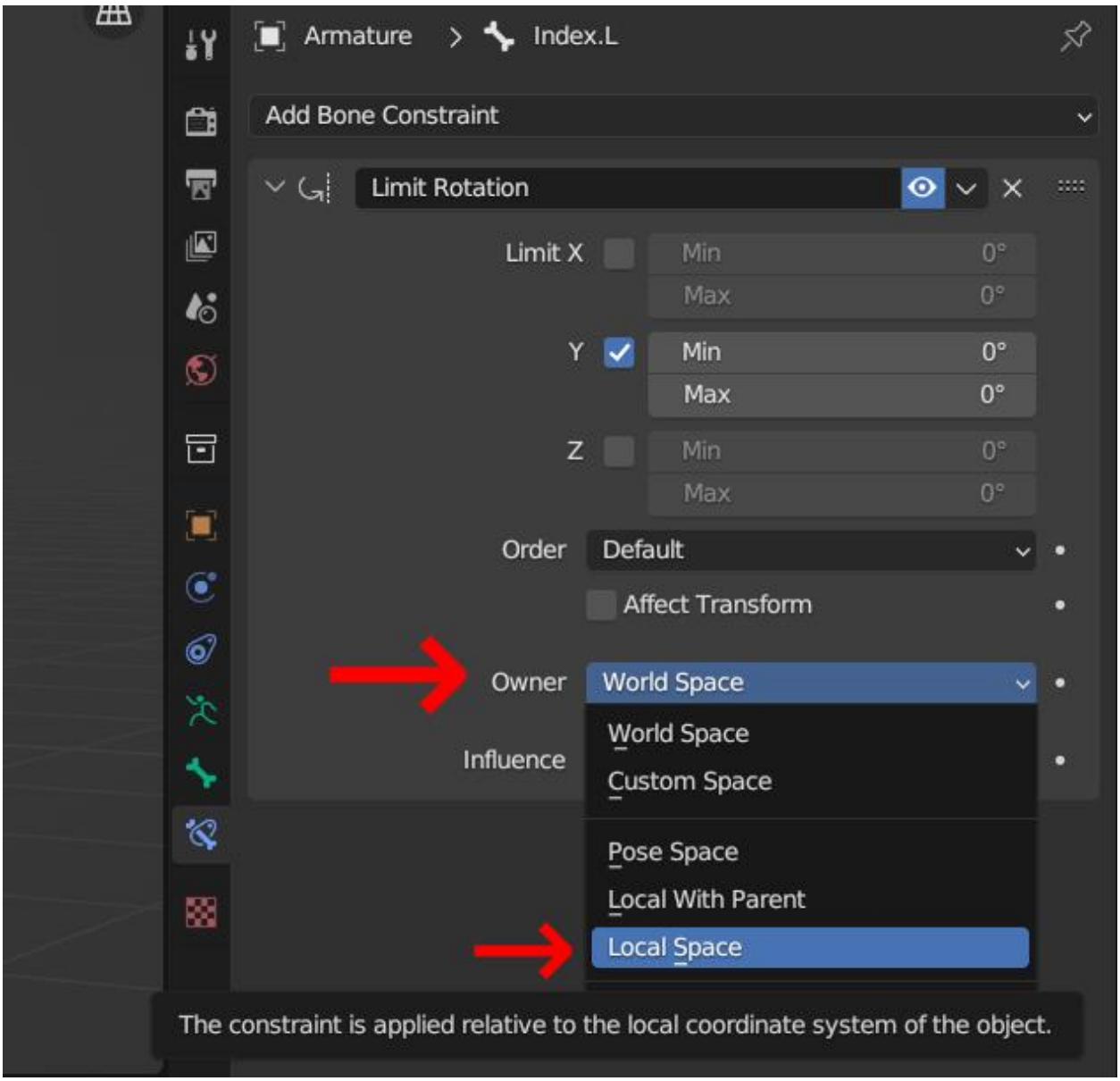

Limit Rotation
Limit X
Min 0°
Max 0°
Y
Min 0°
Max 0°
Z
Min 0°
Max 0°
Order
Default
Affect Transform
Owner
World Space
Influence
1.000

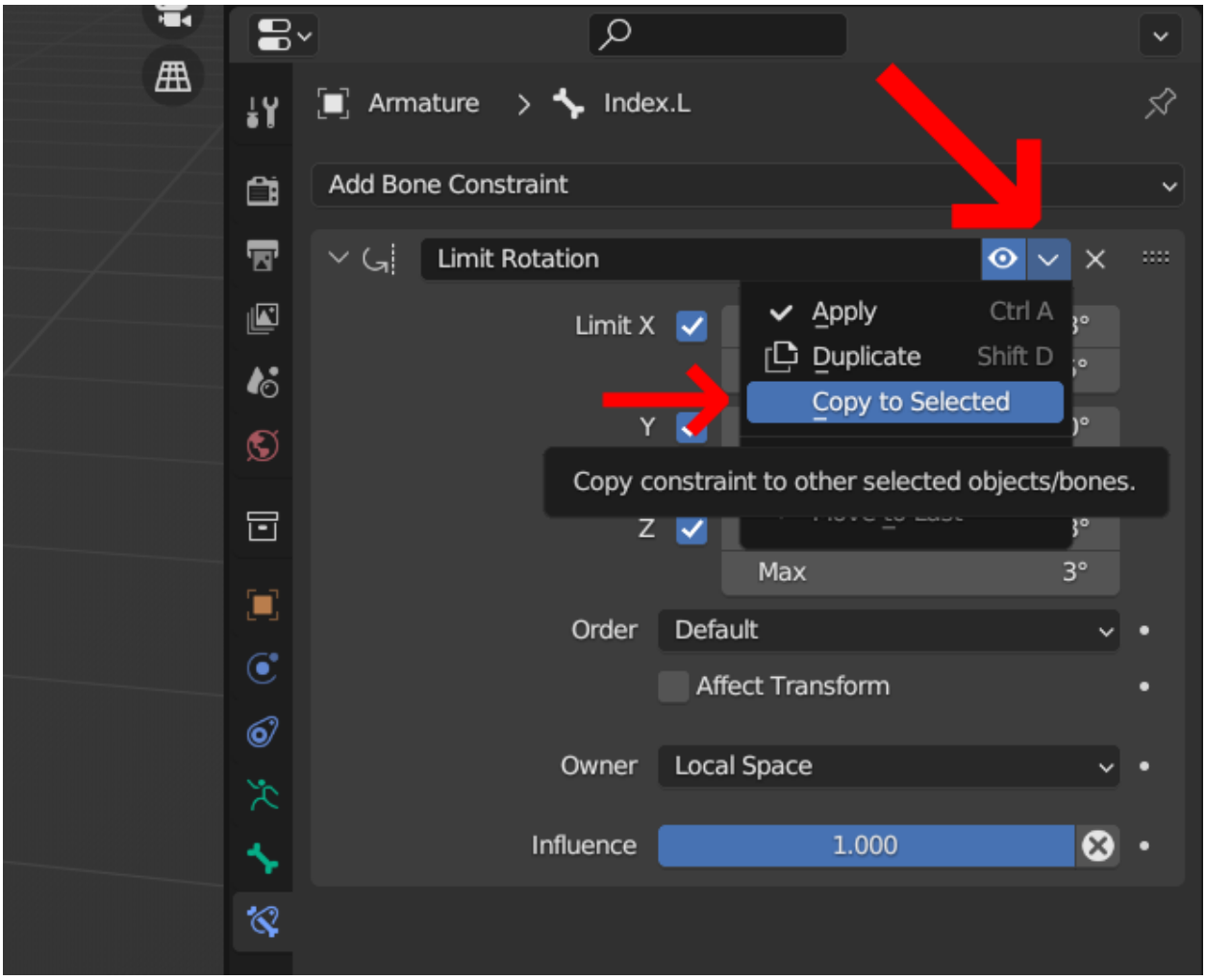


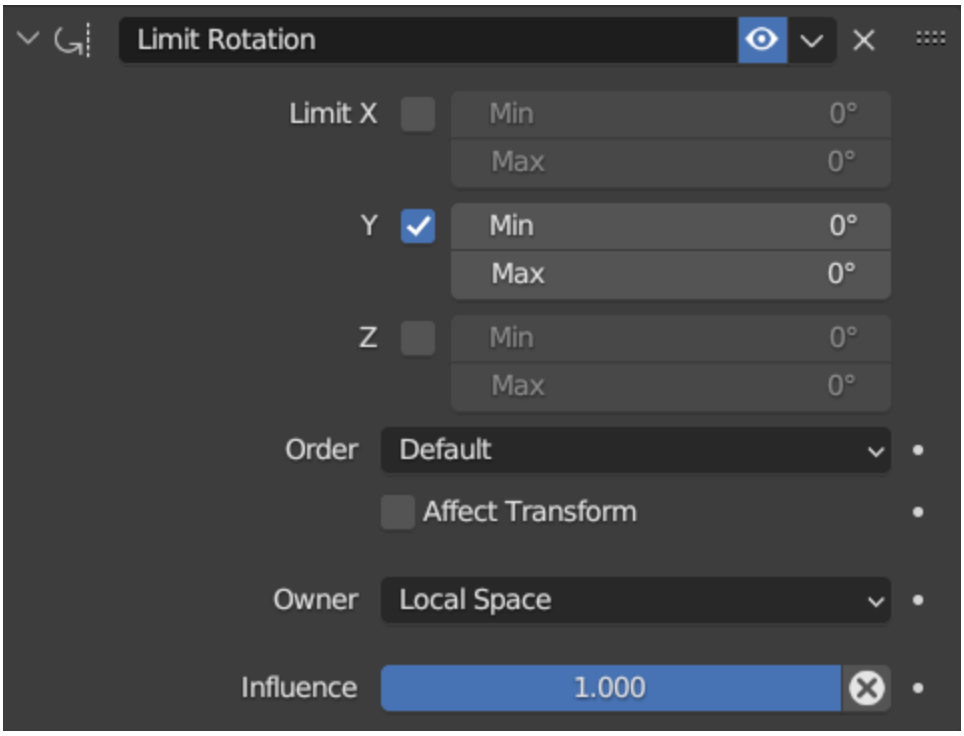

Pose Position
Rest Position
Layers:
Protected Layers:
Bone Groups
Motion Paths
Viewport Display
Display As
Stick
Show
Names
Shapes
Group Colors
In Front
Axes
Position
0.0
Inverse Kinematics

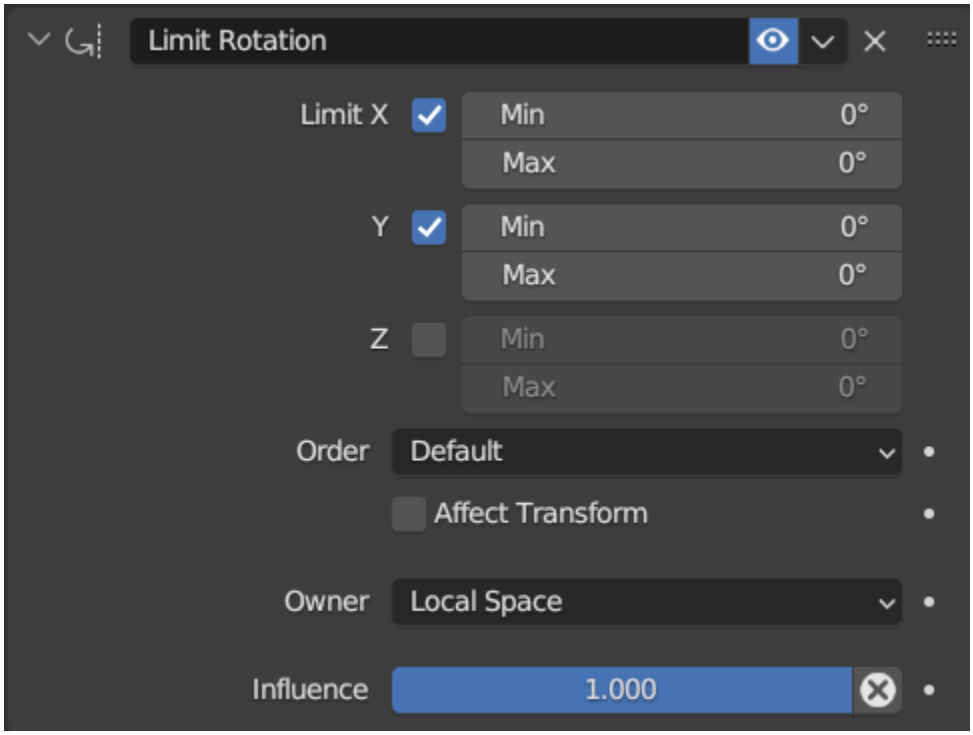

Limit Rotation
Limit X
Min 0°
Max 0°
Y
Min 0°
Max 0°
Z
Min 0°
Max 0°
Order
Default
Affect Transform
Owner
World Space
Influence
1.000

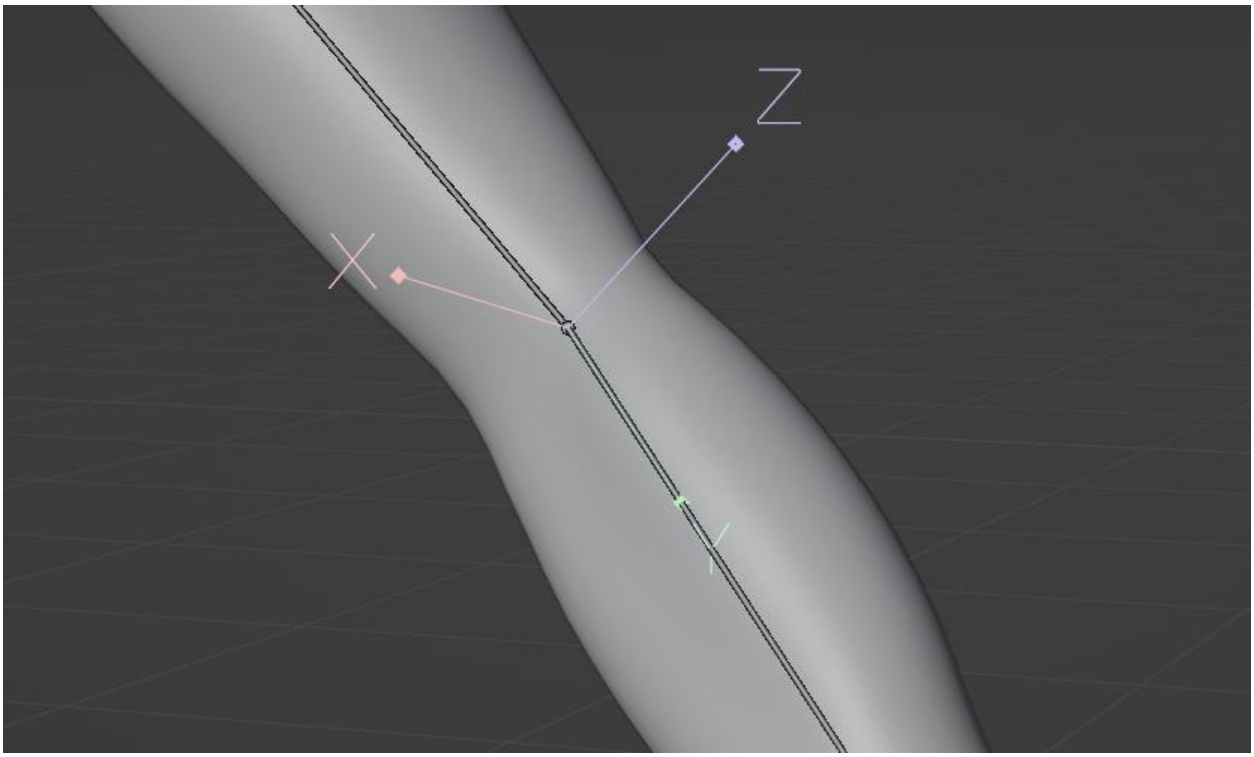


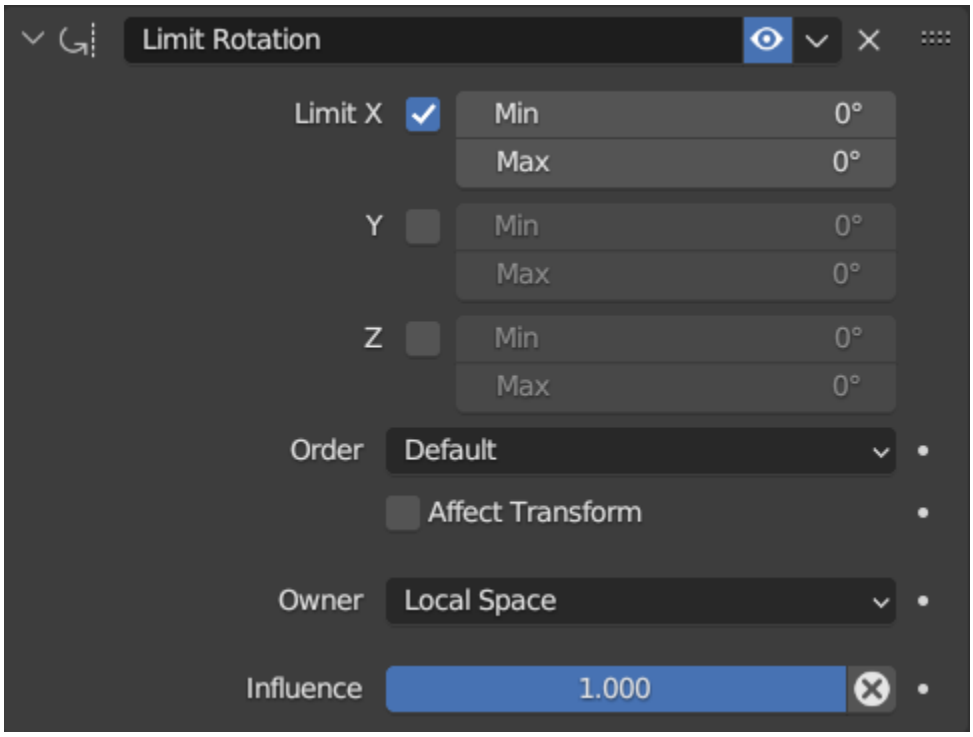

Armature
Index.L
Add Bone Constraint
Limit Rotation
Limit X
Min 0°
Max 0°
Y
Min 0°
Max 0°
Z
Min 0°
Max 0°
Order
Default
Affect Transform
Owner
World Space
Influence
World Space
Custom Space
Pose Space
Local With Parent
Local Space
The constraint is applied relative to the local coordinate system of the object.

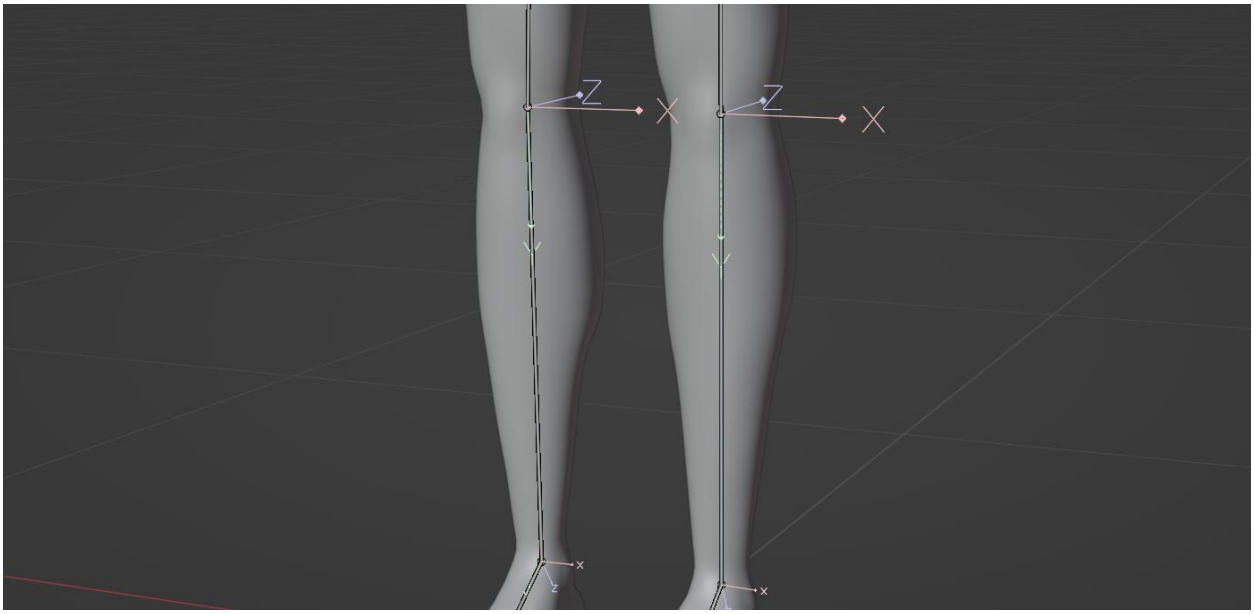

Armature
Index.L
Add Bone Constraint
Limit Rotation
Limit X
Y
Z
Apply Ctrl A
Duplicate Shift D
Copy to Selected
Copy constraint to other selected objects/bones.
Max 3°
Order Default
Affect Transform
Owner Local Space
Influence 1.000

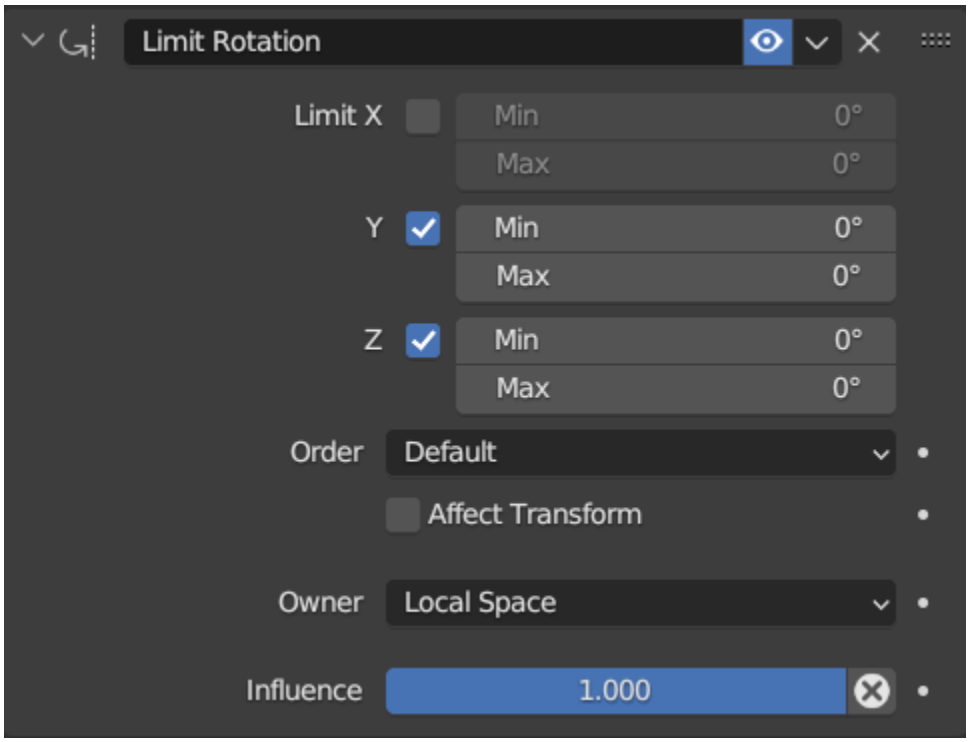

Limit Rotation
Limit X
Min 0°
Max 0°
Y
Min 0°
Max 0°
Z
Min 0°
Max 0°
Order
Default
Affect Transform
Owner
Local Space
Influence
1.000

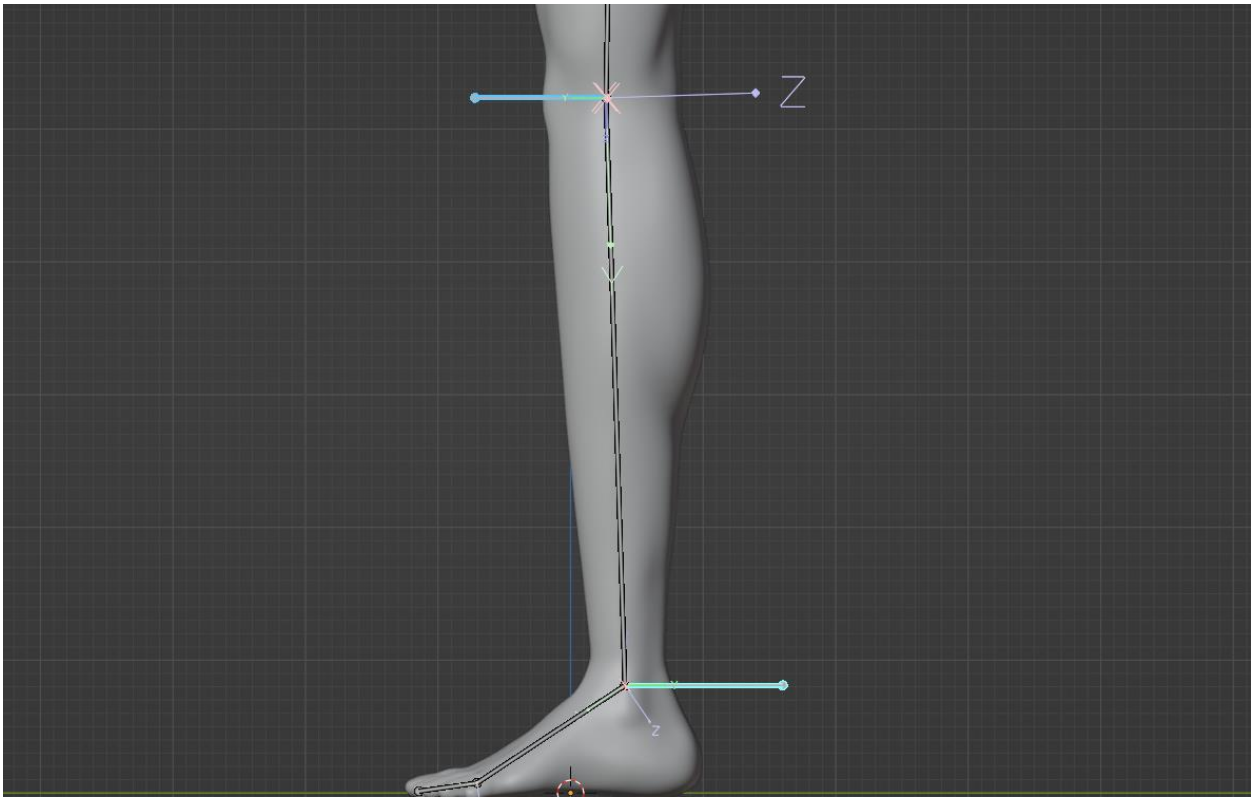

Limit Rotation
Limit X
Min 0°
Max 0°
Y
Min 0°
Max 0°
Z
Min 0°
Max 0°
Order
Default
Affect Transform
Owner
Local Space
Influence
1.000

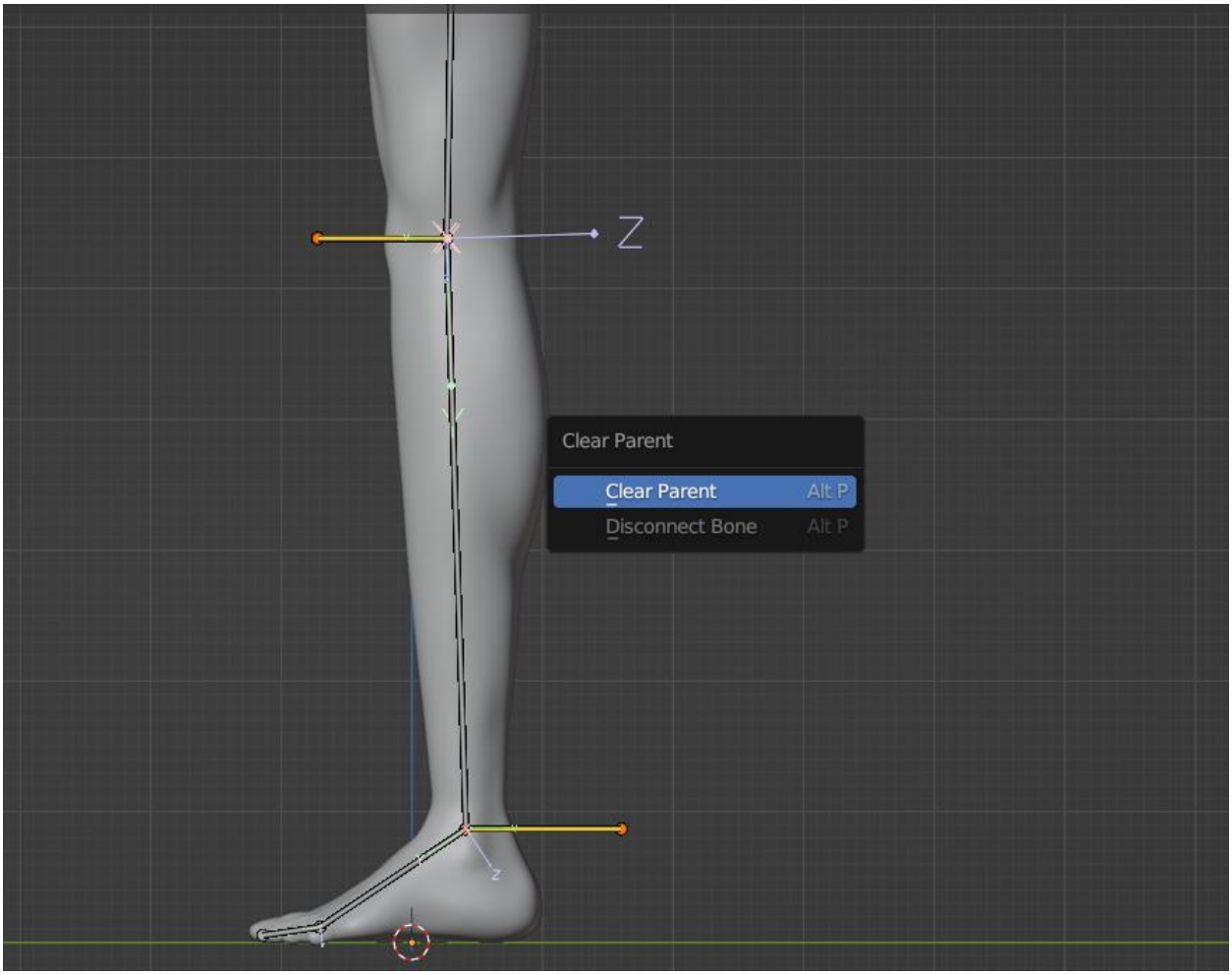

Z


Limit Rotation
Limit X
Min 0°
Max 0°
Y
Min 0°
Max 0°
Z
Min 0°
Max 0°
Order
Default
Affect Transform
Owner
Local Space
Influence
1.000

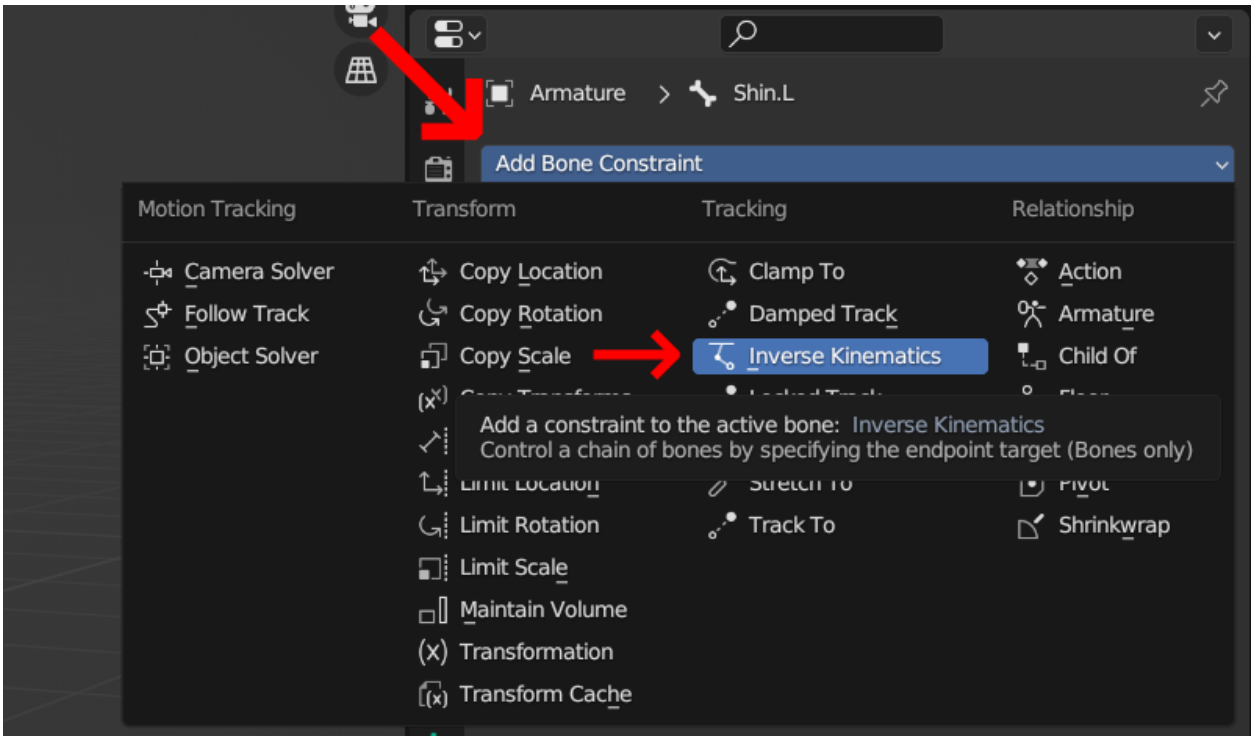

Z
X
Z
X

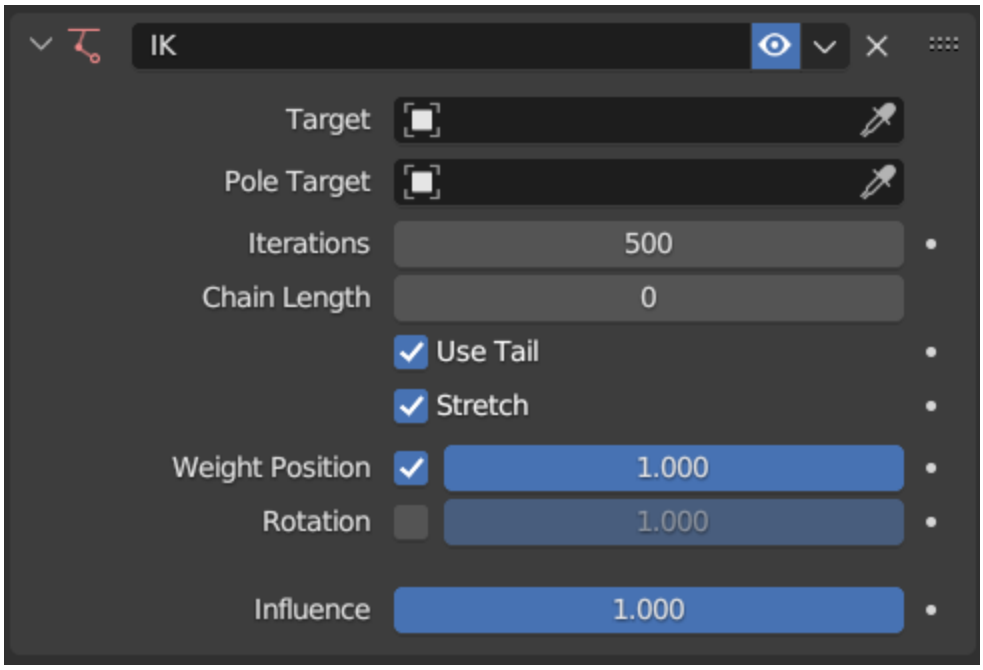

Limit Rotation
Limit X
Min 0°
Max 0°
Y
Min 0°
Max 0°
Z
Min 0°
Max 0°
Order
Default
Affect Transform
Owner
Local Space
Influence
1.000

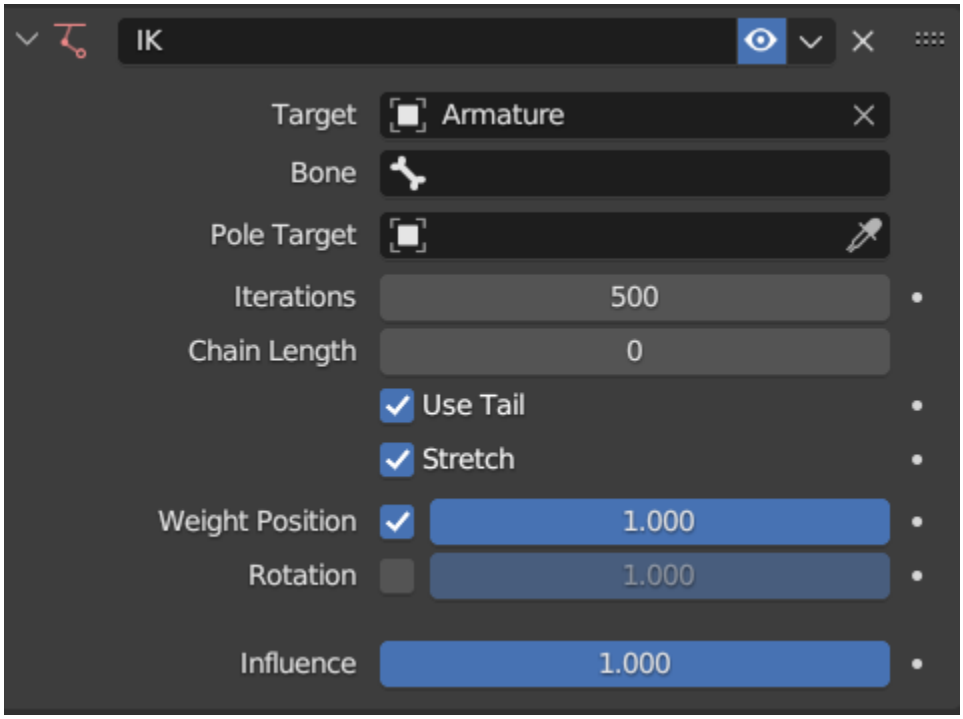

Z

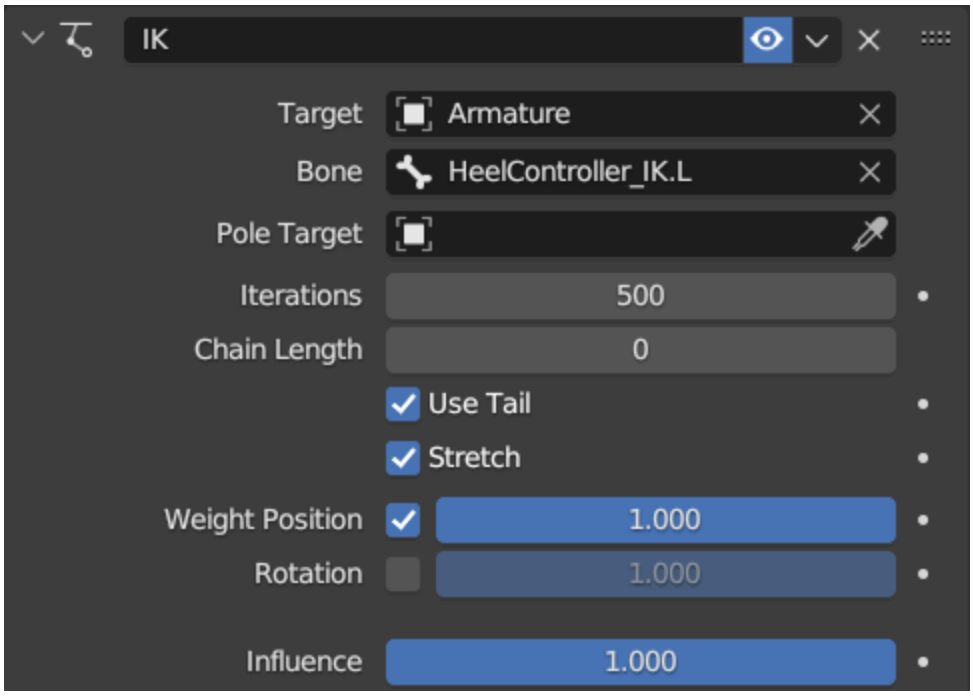

Z
Clear Parent
Clear Parent Alt P
Disconnect Bone Alt P

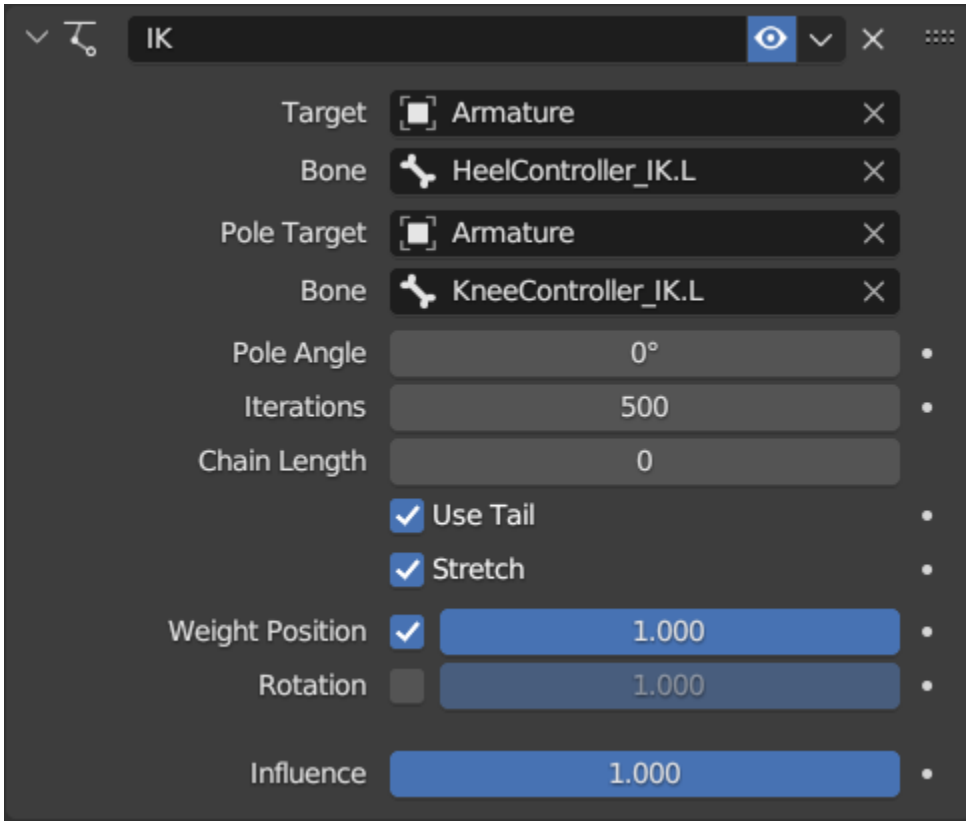
Z

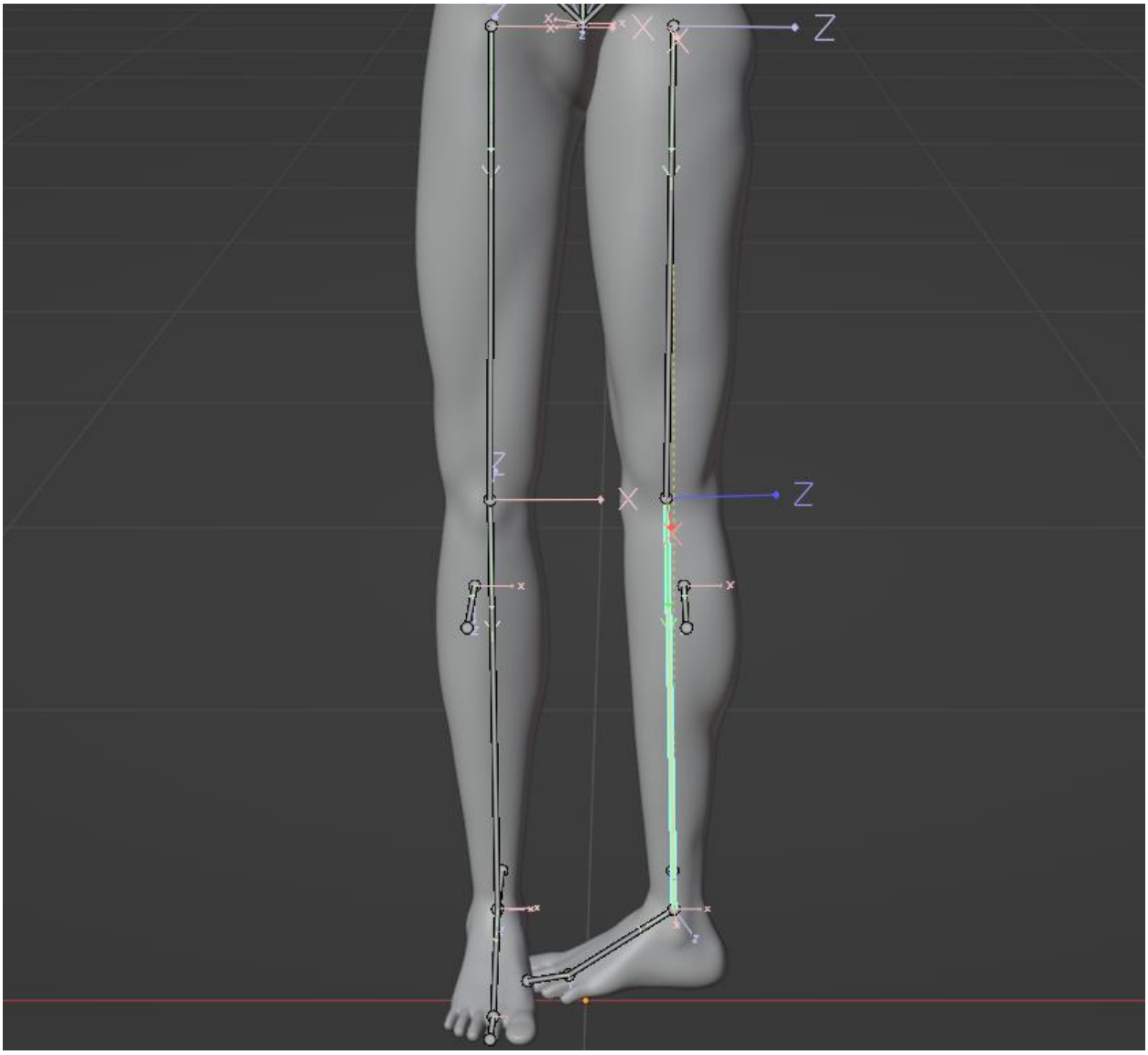

Armature
Shin.L
Add Bone Constraint
Motion Tracking
Transform
Tracking
Relationship
Camera Solver
Follow Track
Object Solver
Copy Location
Copy Rotation
Copy Scale
Clamp To
Damped Track
Inverse Kinematics
Action
Armature
Child Of
Add a constraint to the active bone: Inverse Kinematics
Control a chain of bones by specifying the endpoint target (Bones only)
Limit Rotation
Limit Scale
Maintain Volume
Transformation
Transform Cache
Track To
Shrinkwrap

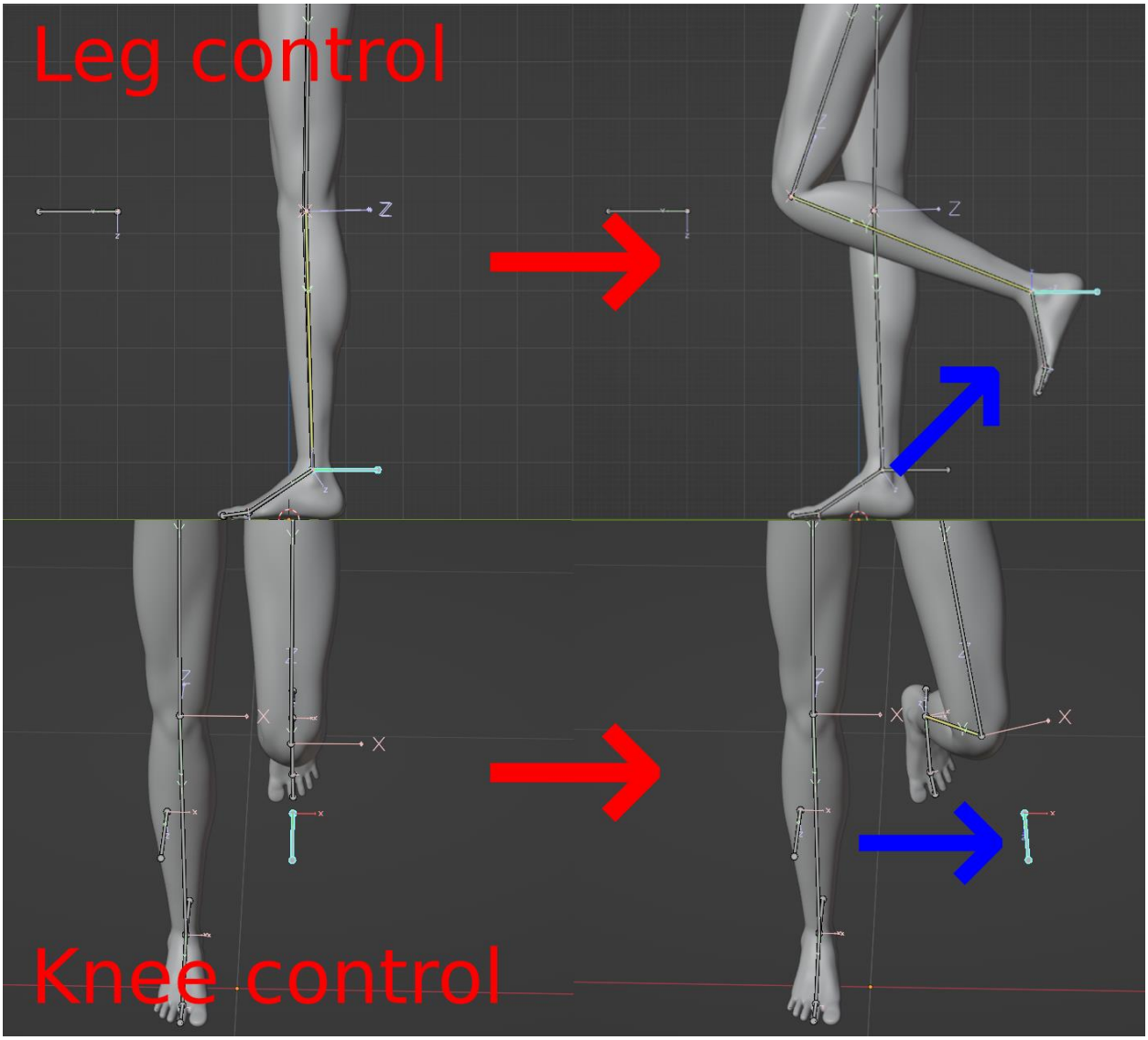

IK
Target
Pole Target
Iterations
500
Chain Length
0
Use Tail
Stretch
Weight Position
1.000
Rotation
1.000
Influence
1.000

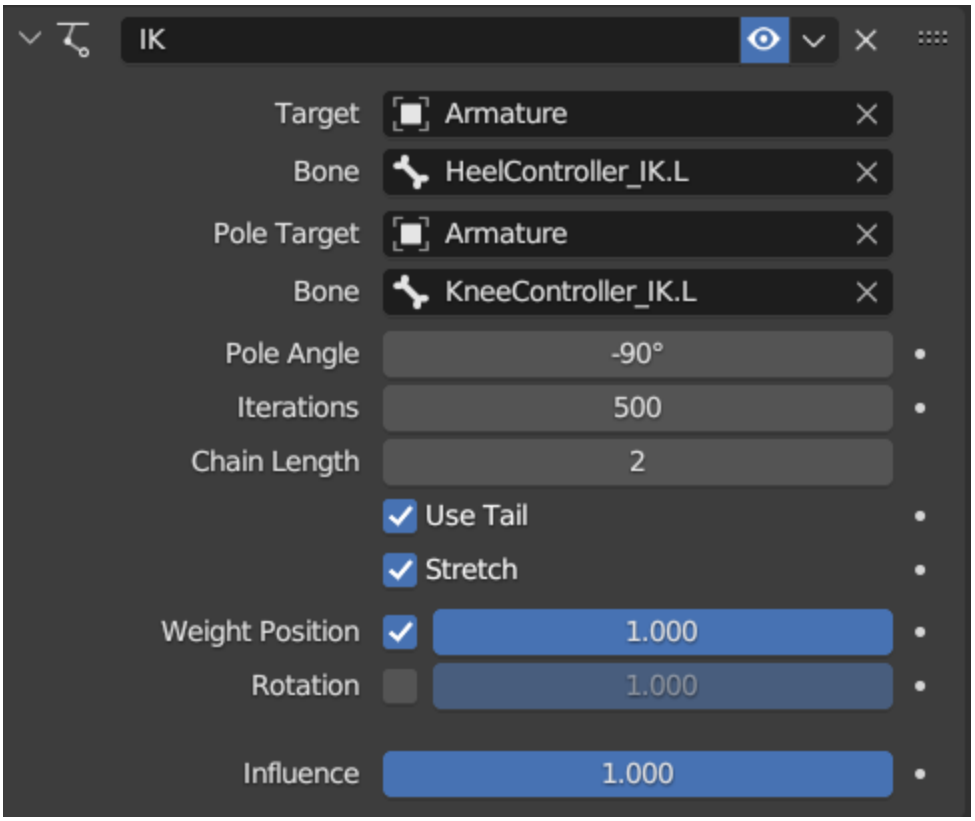

IK
Target
Armature
Bone
Pole Target
Iterations
500
Chain Length
0
Use Tail
Stretch
Weight Position
1.000
Rotation
1.000
Influence
1.000

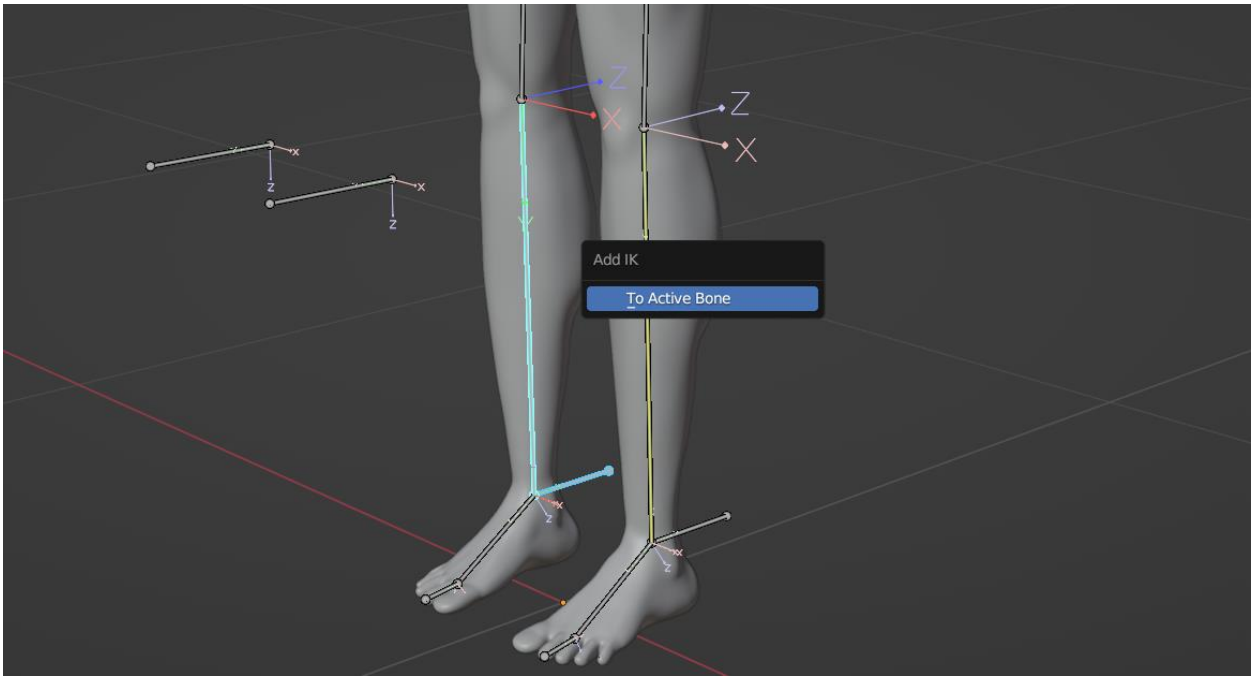

IK
Target
Armature
Bone
HeelController_IK.L
Pole Target
Iterations
500
Chain Length
0
Use Tail
Stretch
Weight Position
1.000
Rotation
1.000
Influence
1.000

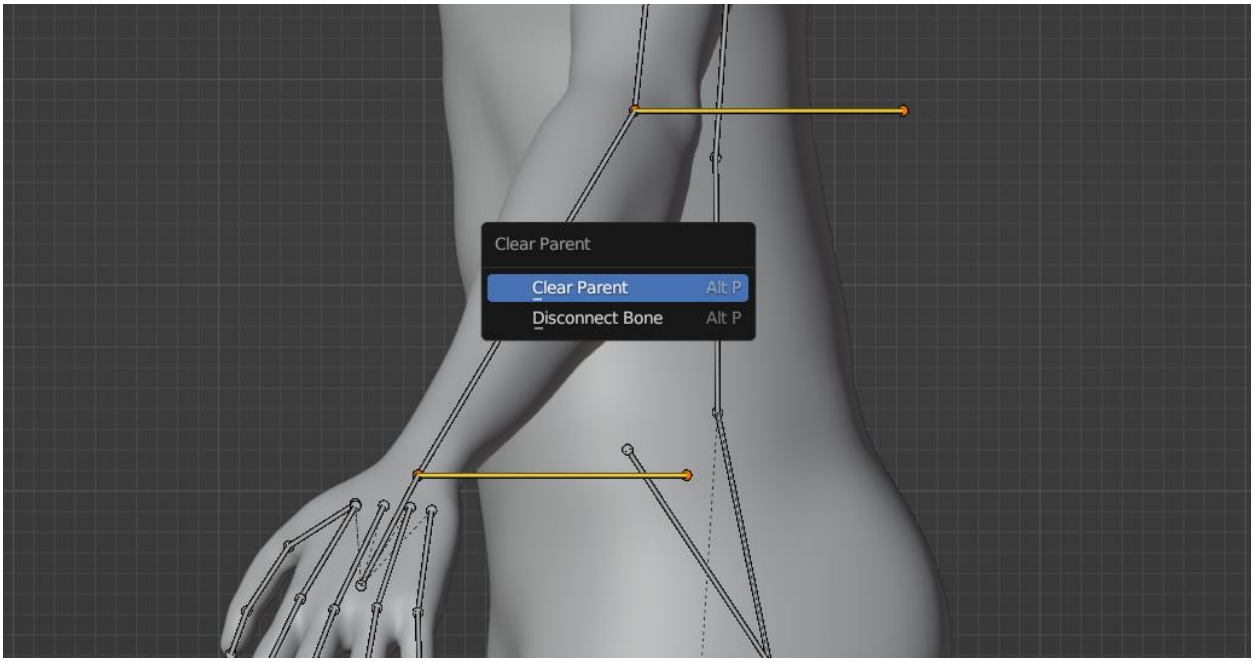

IK
Target
Armature
Bone
HeelController_IK.L
Pole Target
Armature
Bone
KneeController_IK.L
Pole Angle
0°
Iterations
500
Chain Length
0
Use Tail
Stretch
Weight Position
1.000
Rotation
1.000
Influence
1.000

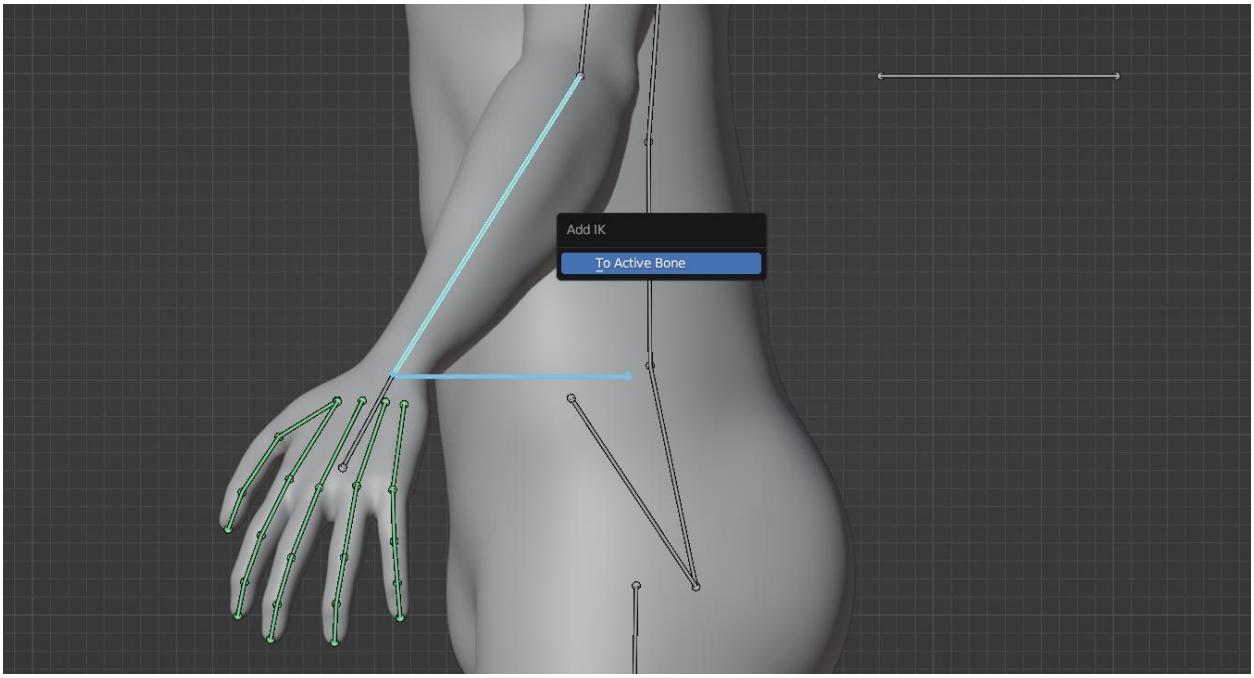

Z
X
Z
Z
X
Z

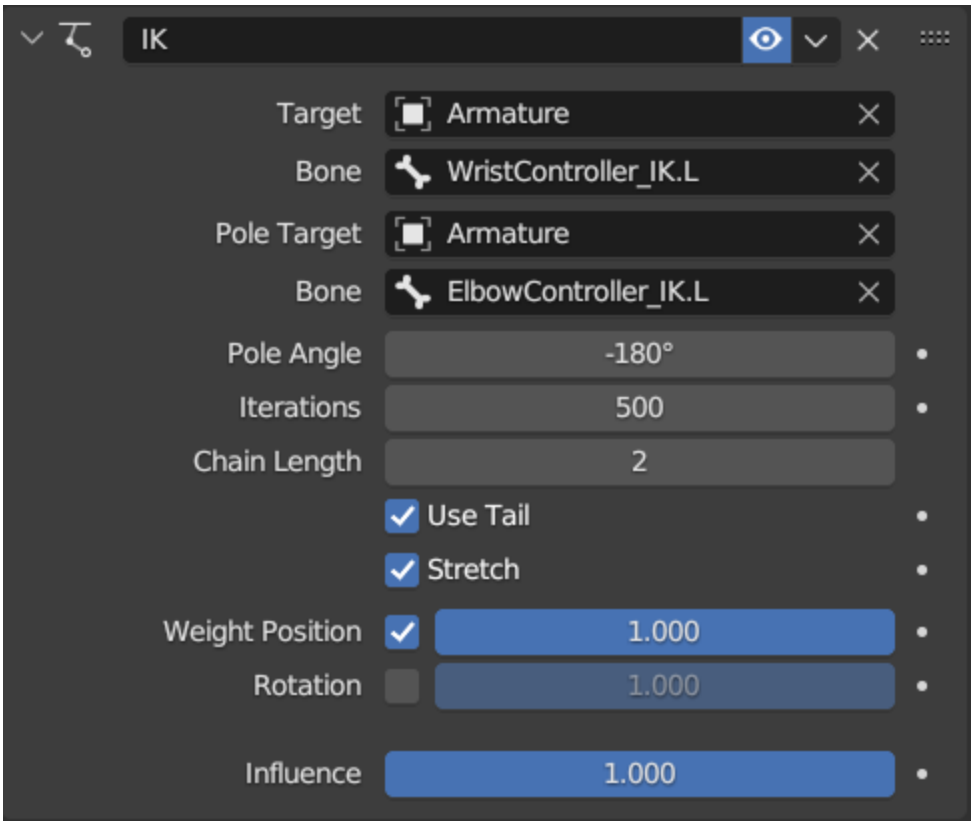

Leg control
Knee control

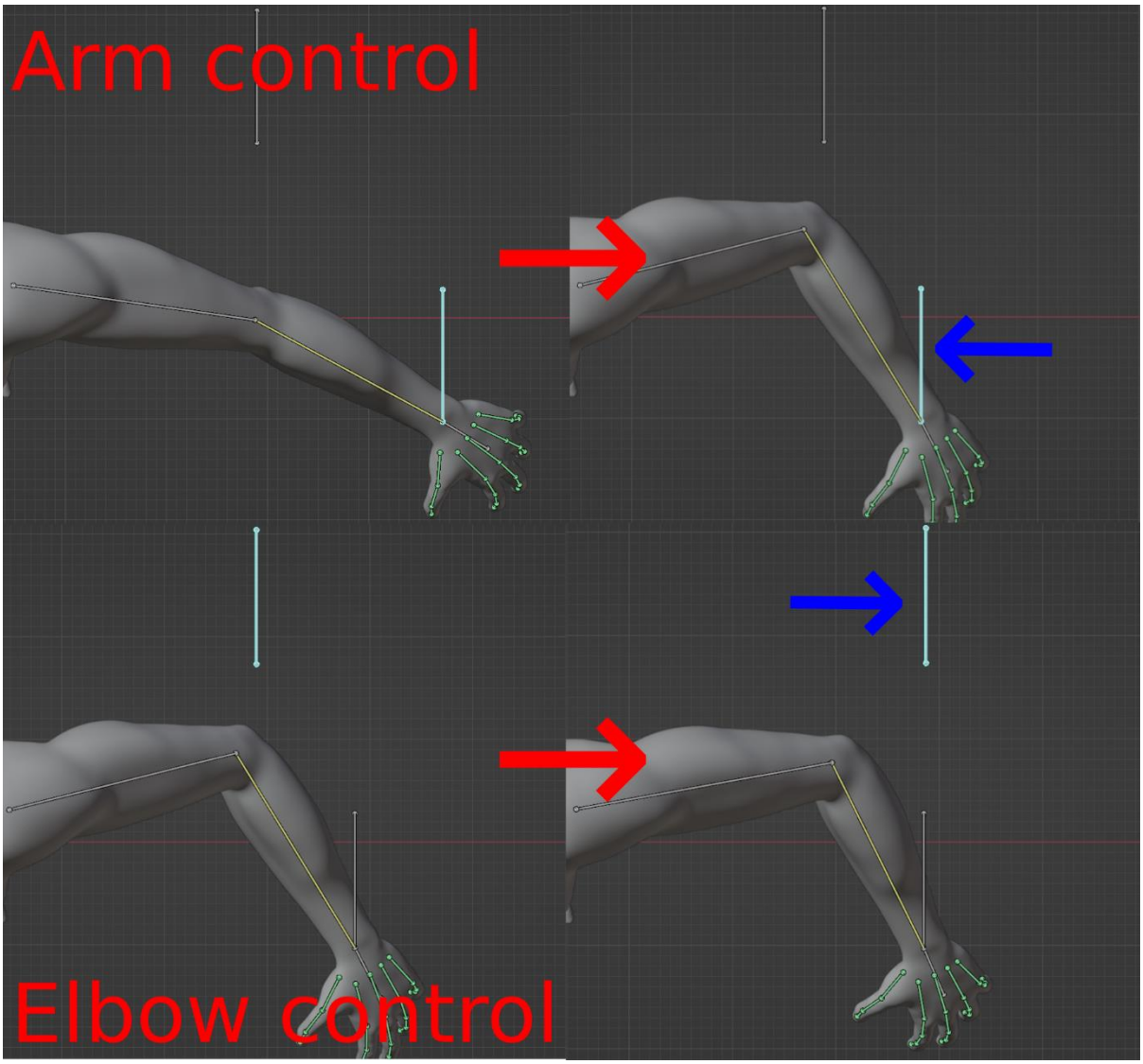

IK
Target
Armature
Bone
HeelController_IK.L
Pole Target
Armature
Bone
KneeController_IK.L
Pole Angle
-90°
Iterations
500
Chain Length
2
Use Tail
Stretch
Weight Position
1.000
Rotation
1.000
Influence
1.000

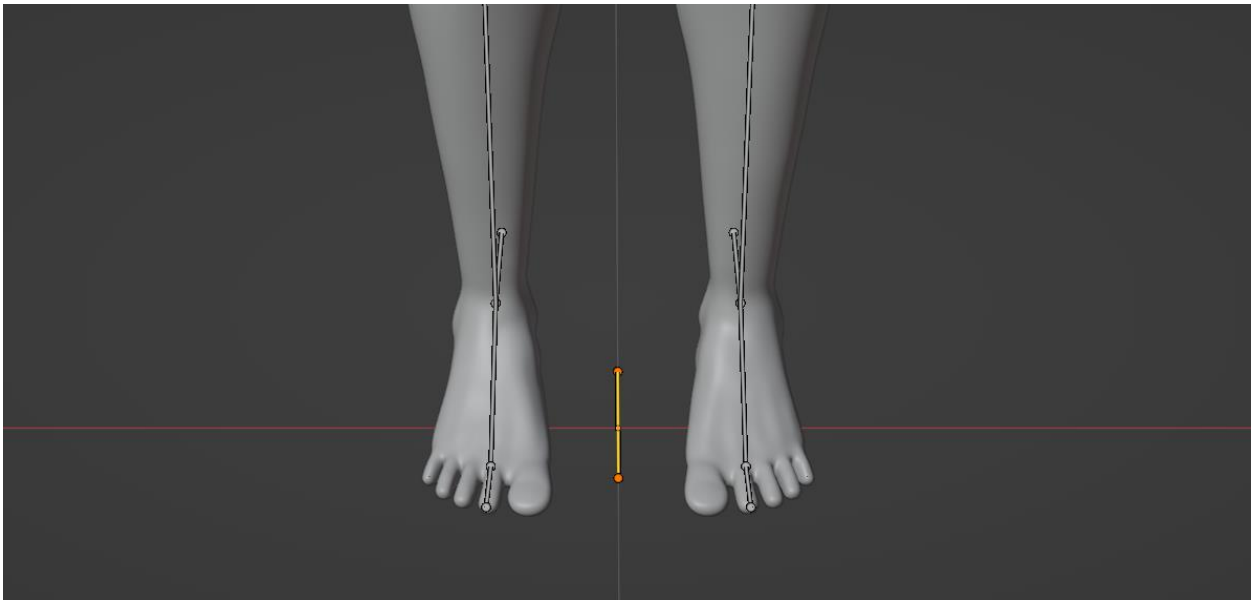

Add IK
To Active Bone

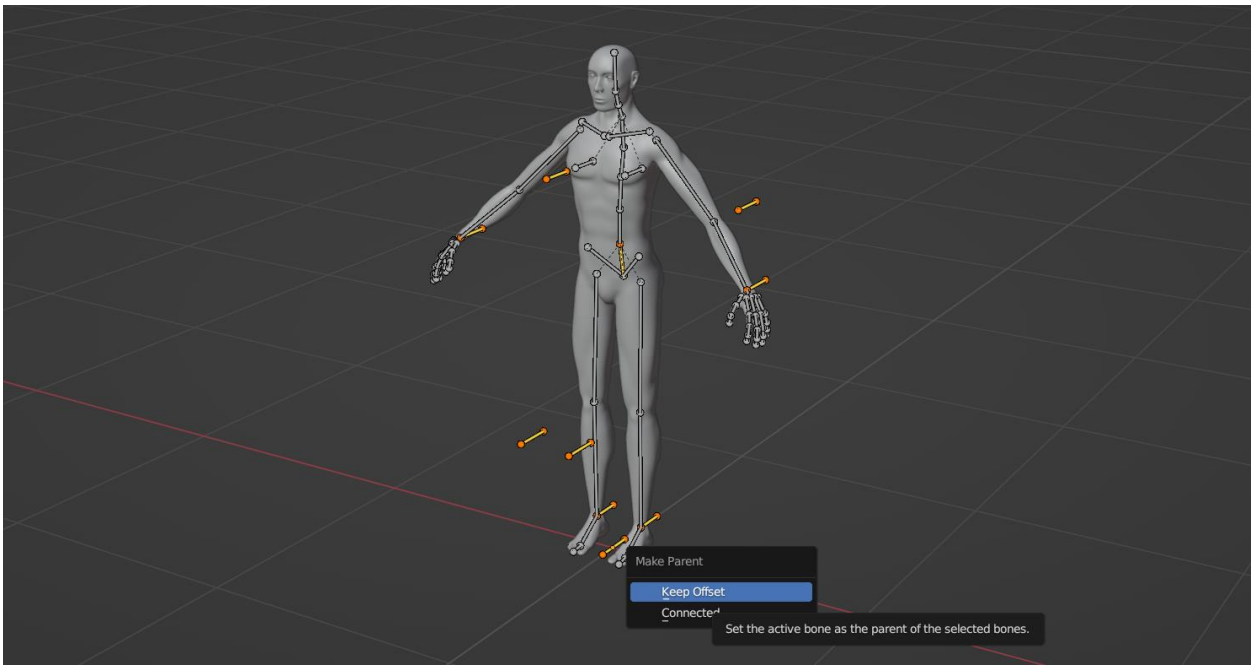

Clear Parent
Clear Parent Alt P
Disconnect Bone Alt P

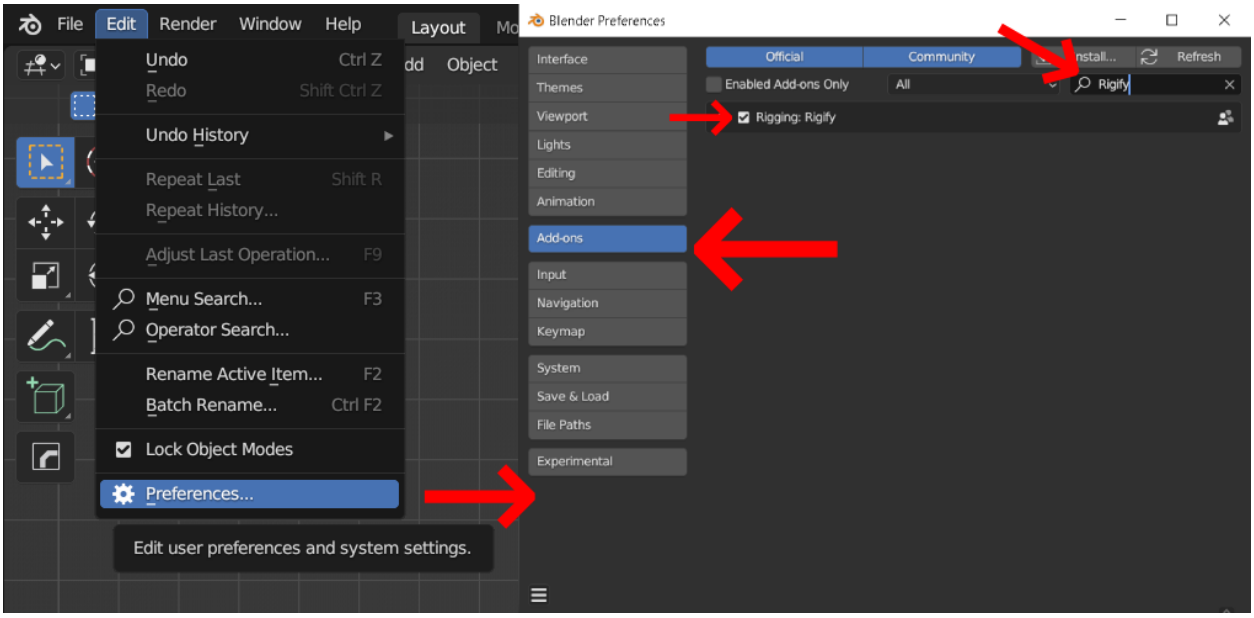

Add IK
To Active Bone

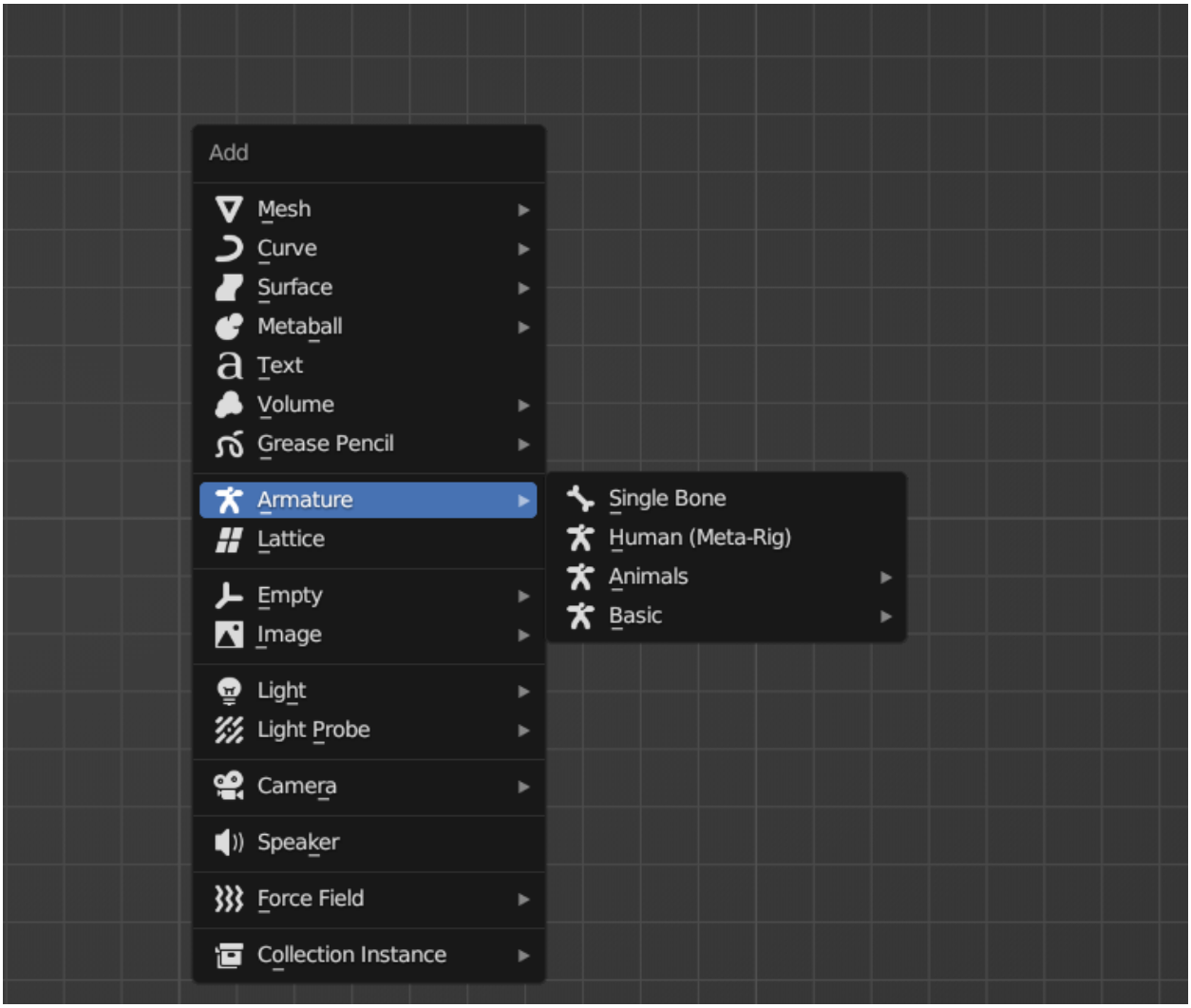

IK
Target
Armature
Bone
WristController_IK.L
Pole Target
Armature
Bone
ElbowController_IK.L
Pole Angle
-180°
Iterations
500
Chain Length
2
Use Tail
Stretch
Weight Position
1.000
Rotation
1.000
Influence
1.000

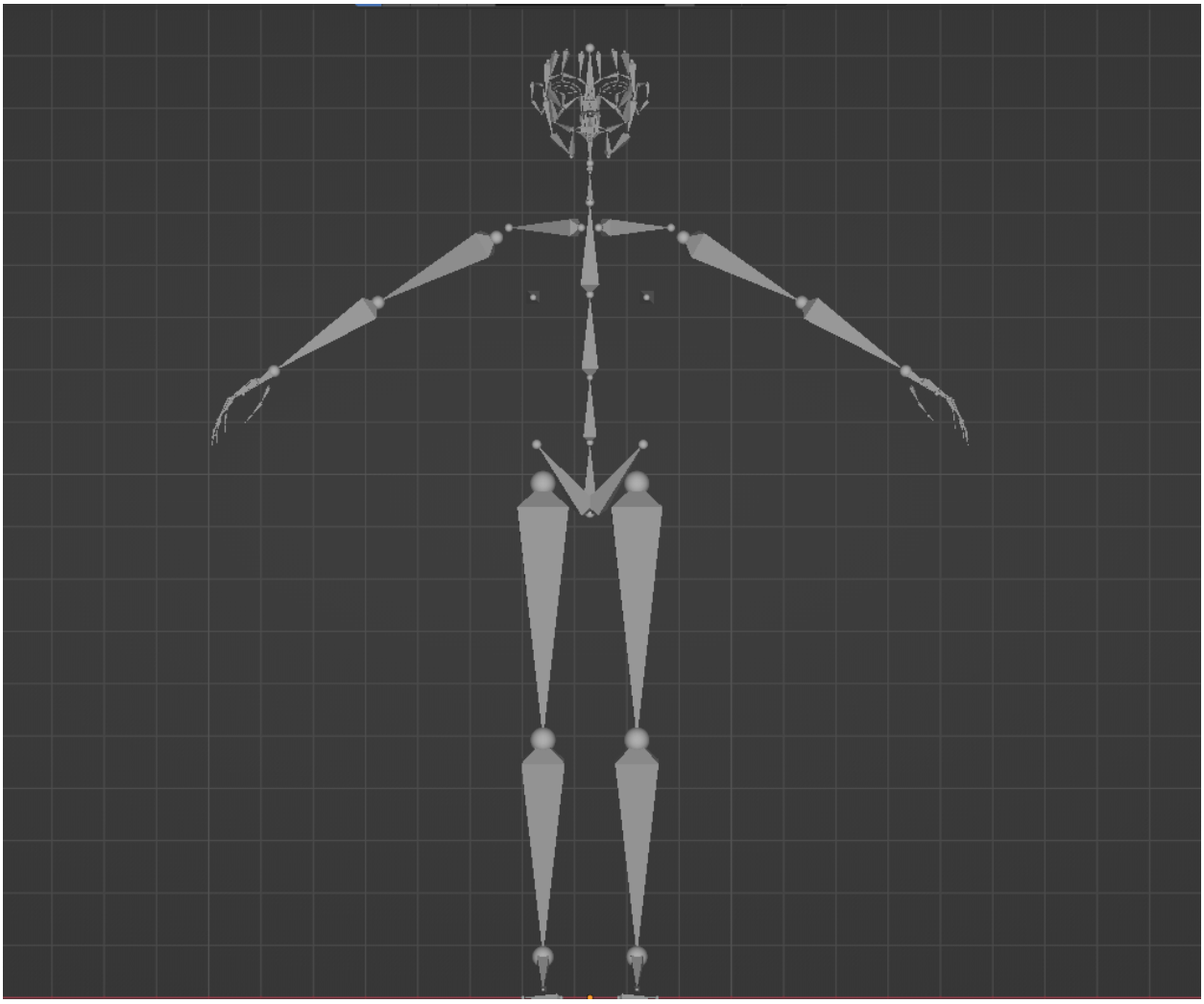

Arm control
Elbow control

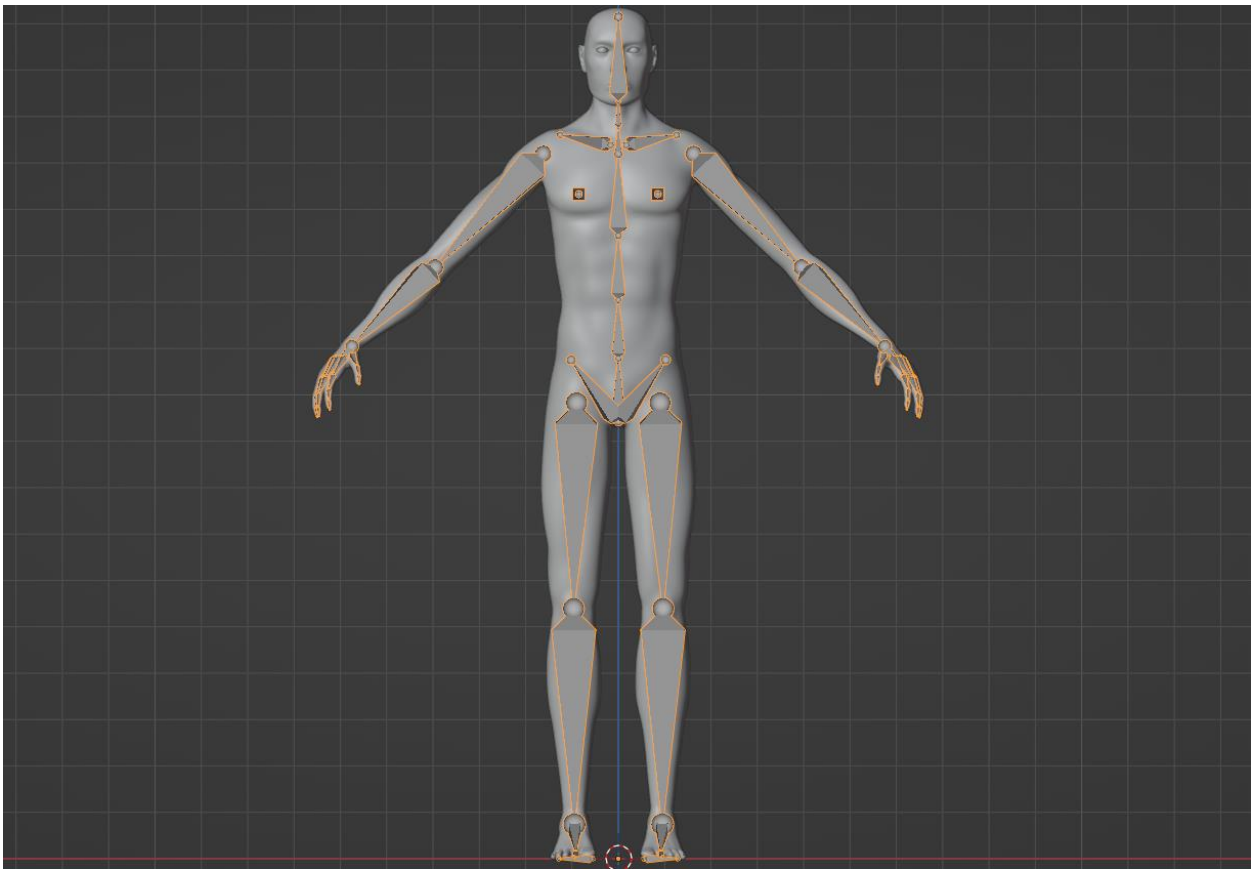


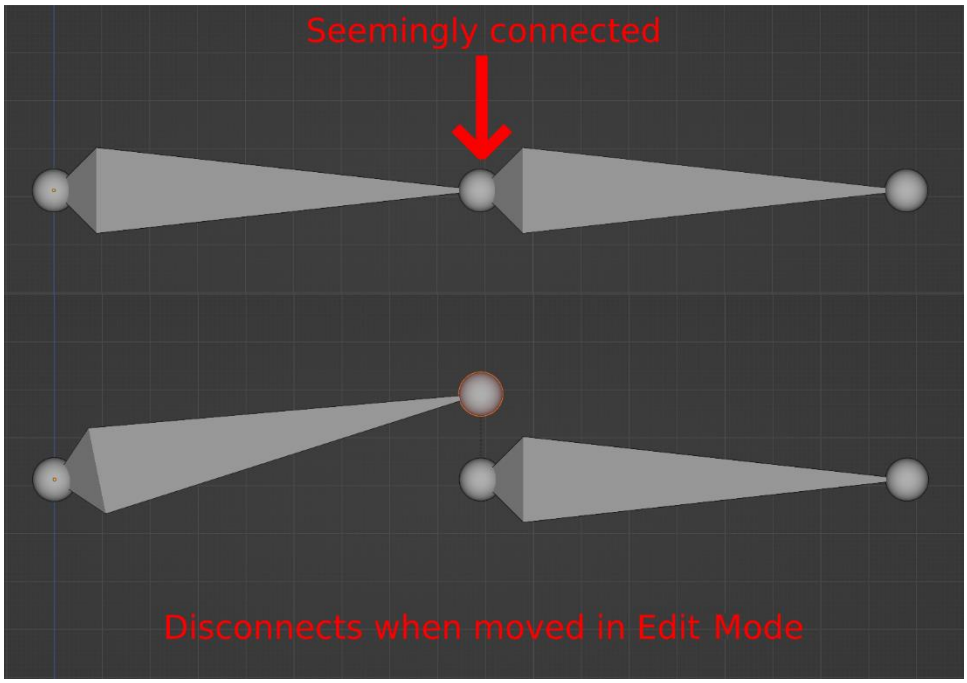

Make Parent
Keep Offset
Set the active bone as the parent of the selected bones.

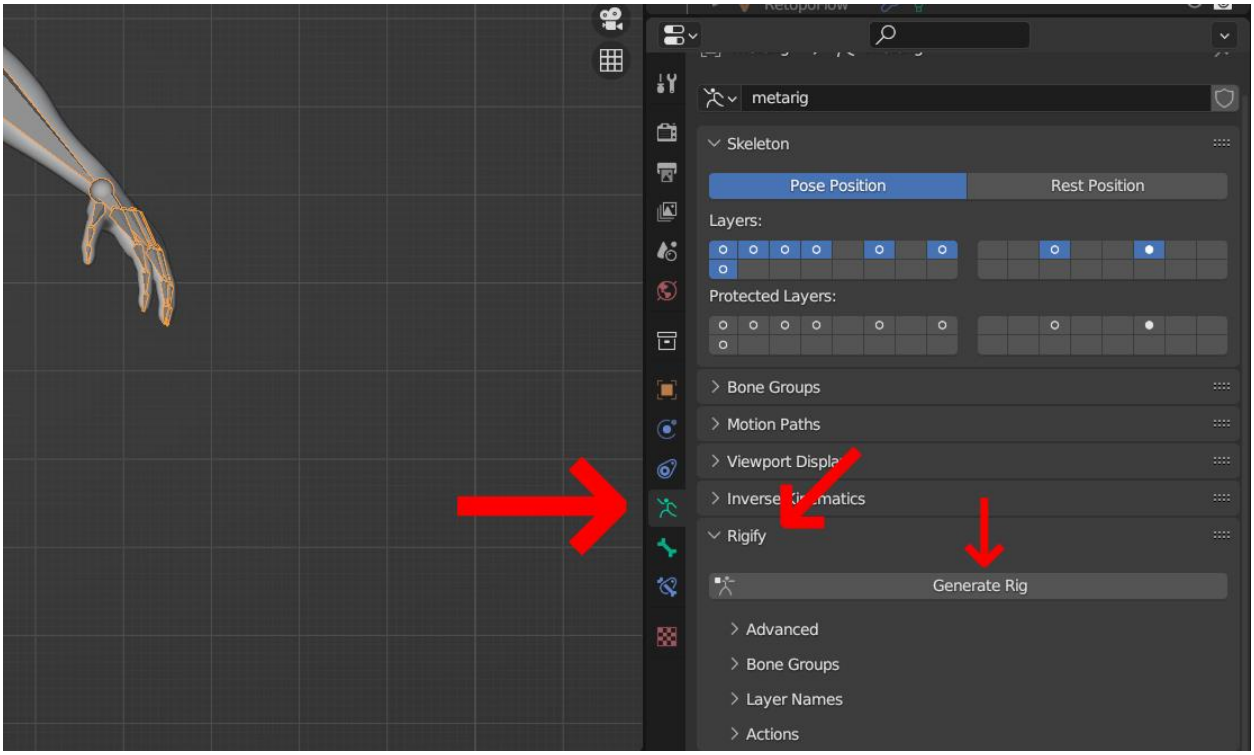

File
Edit
Render
Window
Help
Layout
Undo Ctrl Z
Redo Shift Ctrl Z
Undo History
Repeat Last Shift R
Repeat History...
Adjust Last Operation... F9
Menu Search... F3
Operator Search...
Rename Active Item... F2
Batch Rename... Ctrl F2
Lock Object Modes
Preferences...
Edit user preferences and system settings.
Blender Preferences
Interface
Themes
Viewport
Lights
Editing
Animation
Add-ons
Input
Navigation
Keymap
System
Save & Load
File Paths
Experimental
Official
Community
Refresh
Enabled Add-ons Only
All
Rigify
Rigging: Rigify

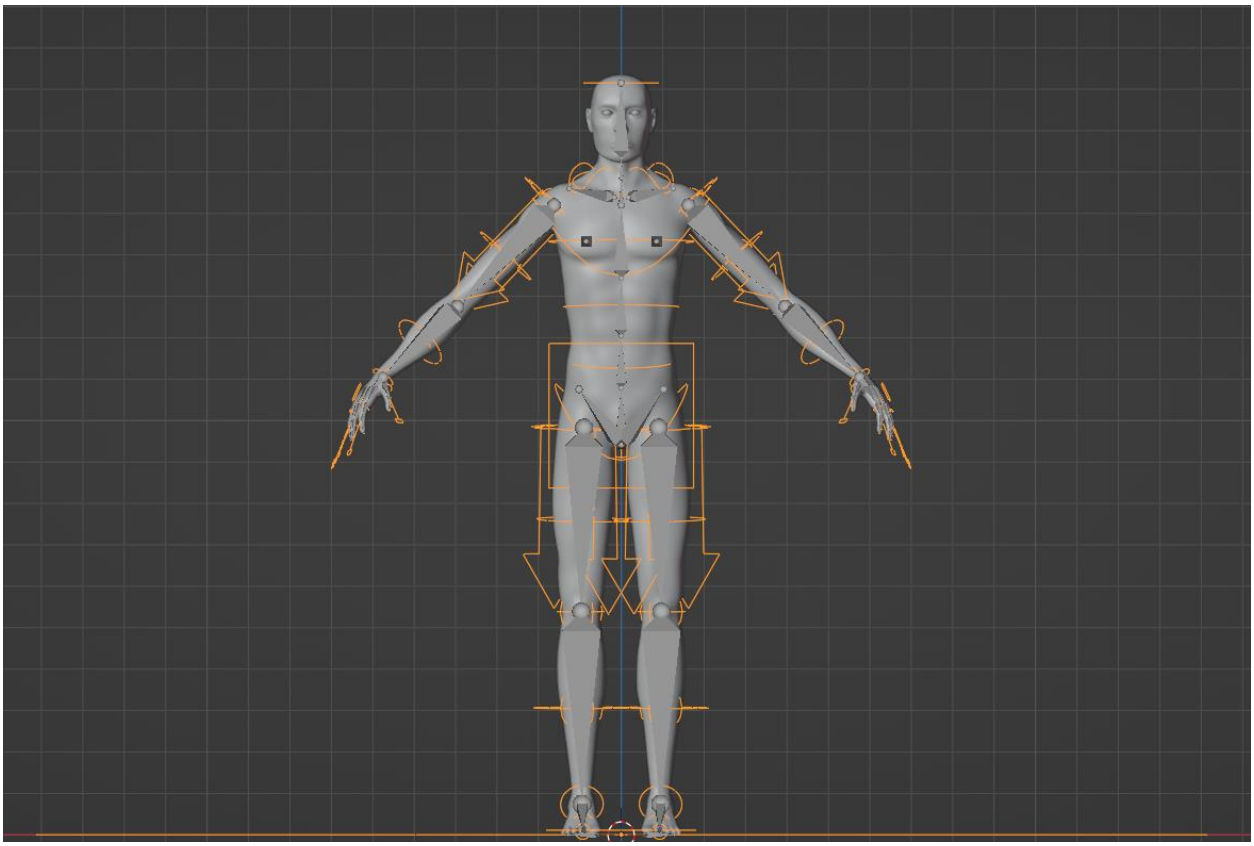

Add
Mesh
Curve
Surface
Metaball
Text
Volume
Grease Pencil
Armature
Lattice
Empty
Image
Light
Light Probe
Camera
Speaker
Force Field
Collection Instance
Single Bone
Human (Meta-Rig)
Animals
Basic

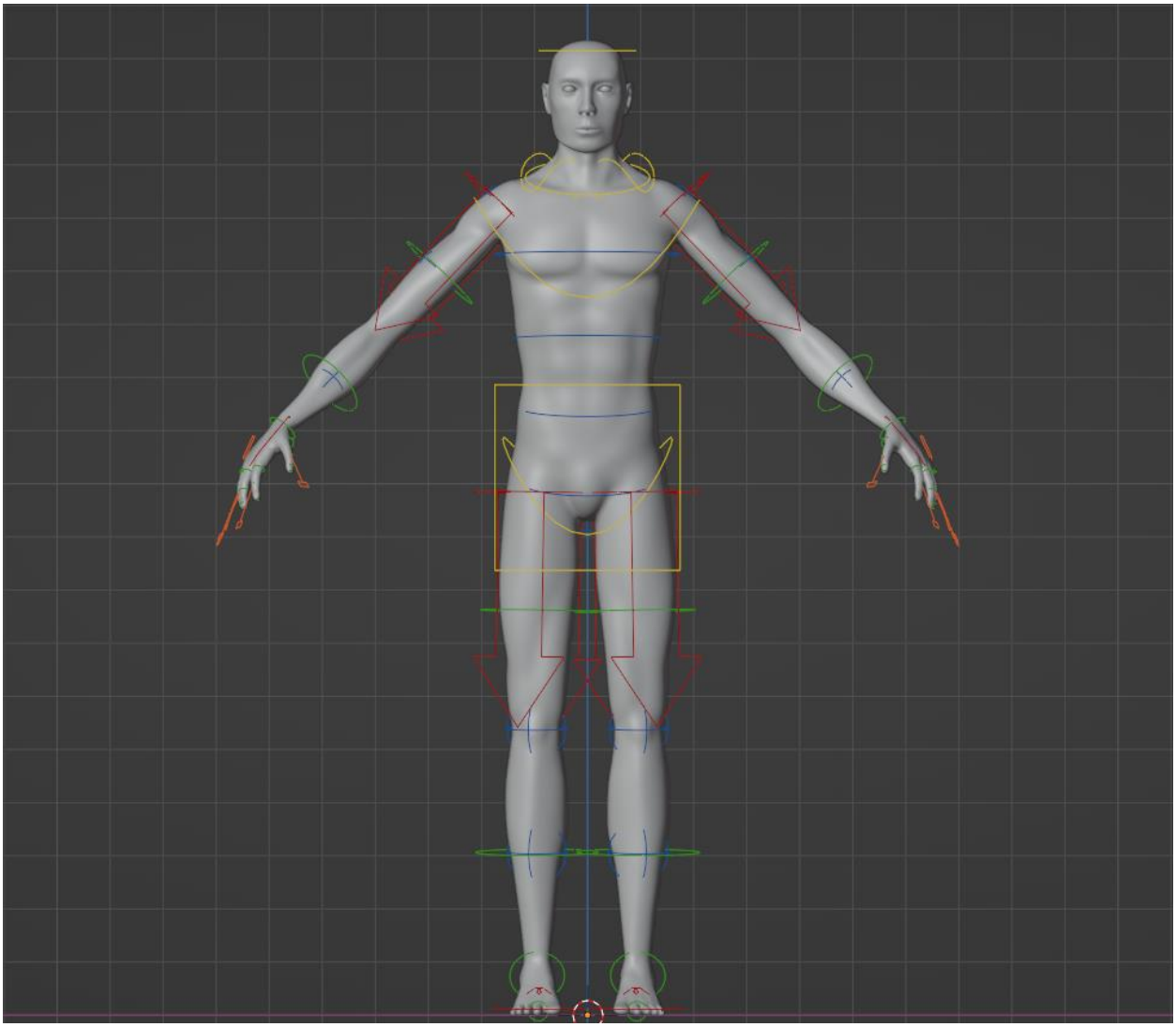


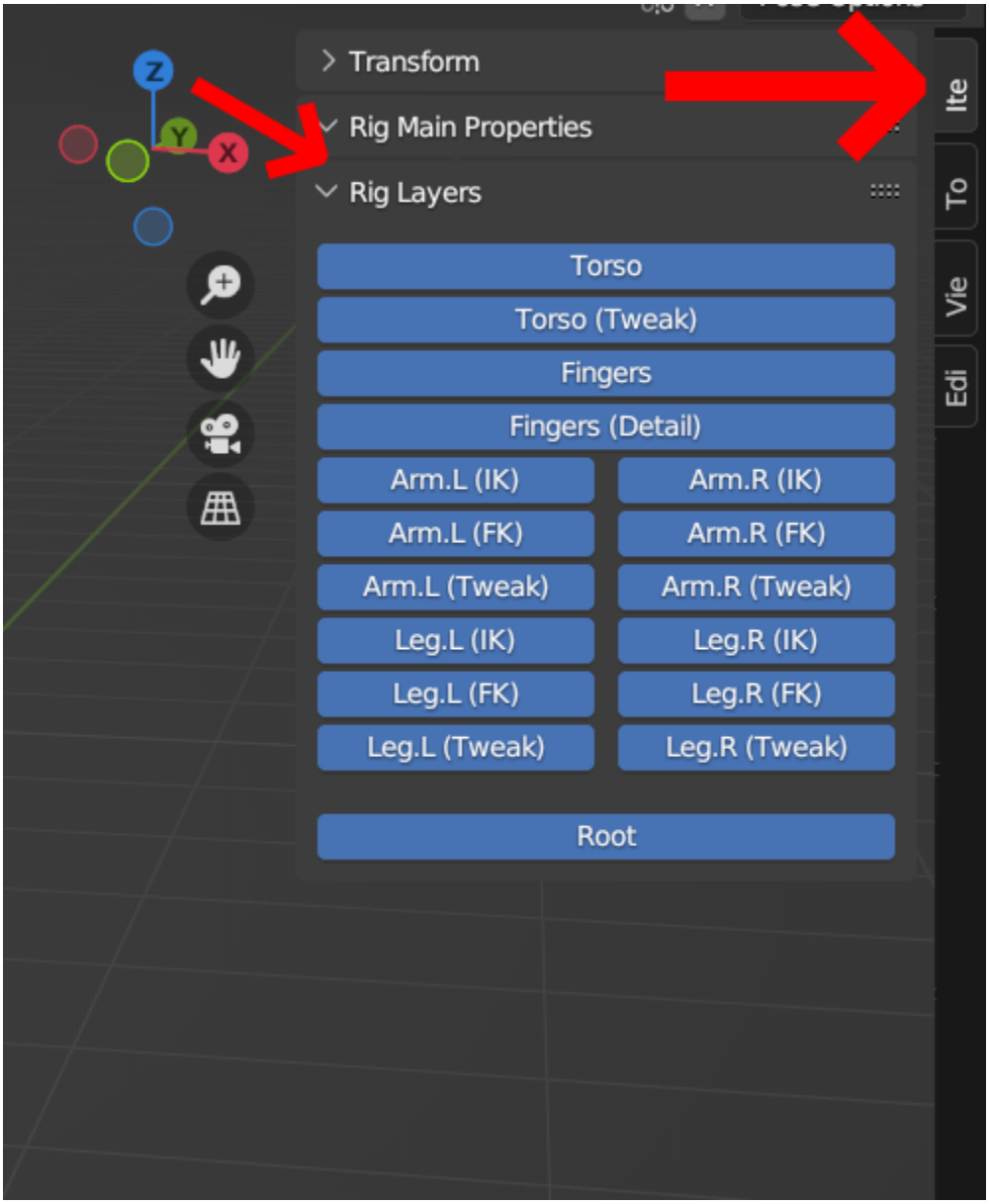


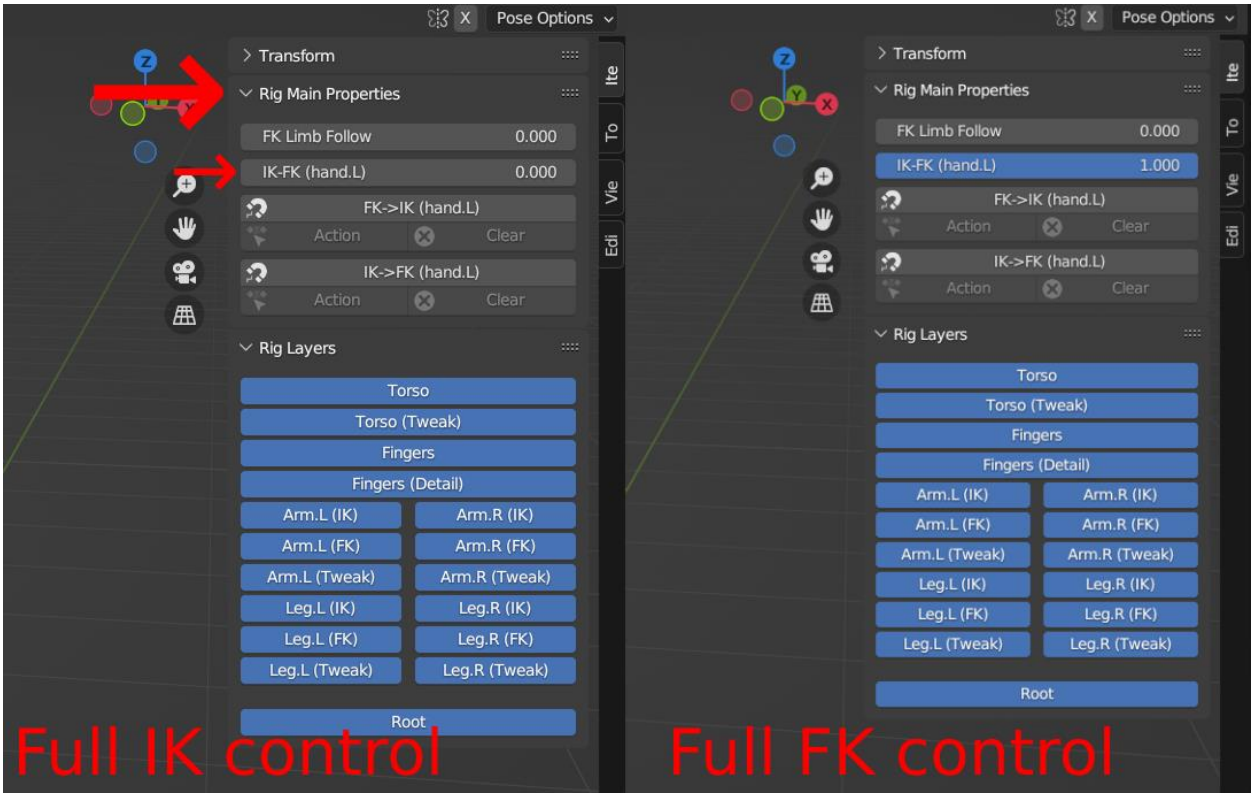

Seemingly connected
Disconnects when moved in Edit Mode


metarig
Skeleton
Pose Position
Rest Position
Layers:
Protected Layers:
Bone Groups
Motion Paths
Rigify
Generate Rig
Advanced
Bone Groups
Layer Names
Actions






Transform
Rig Main Properties
Rig Layers
Torso
Torso (Tweak)
Fingers
Fingers (Detail)
Arm.L (IK)
Arm.R (IK)
Arm.L (FK)
Arm.R (FK)
Arm.L (Tweak)
Arm.R (Tweak)
Leg.L (IK)
Leg.R (IK)
Leg.L (FK)
Leg.R (FK)
Leg.L (Tweak)
Leg.R (Tweak)
Root
Ite
To
Vie
Edi


Pose Options
Transform
Rig Main Properties
FK Limb Follow 0.000
IK-FK (hand.L) 0.000
FK->IK (hand.L)
Action
Clear
IK->FK (hand.L)
Action
Clear
Rig Layers
Torso
Torso (Tweak)
Fingers
Fingers (Detail)
Arm.L (IK)
Arm.R (IK)
Arm.L (FK)
Arm.R (FK)
Arm.L (Tweak)
Arm.R (Tweak)
Leg.L (IK)
Leg.R (IK)
Leg.L (FK)
Leg.R (FK)
Leg.L (Tweak)
Leg.R (Tweak)
Root
Full IK control
Pose Options
Transform
Rig Main Properties
FK Limb Follow 0.000
IK-FK (hand.L) 1.000
FK->IK (hand.L)
Action
Clear
IK->FK (hand.L)
Action
Clear
Rig Layers
Torso
Torso (Tweak)
Fingers
Fingers (Detail)
Arm.L (IK)
Arm.R (IK)
Arm.L (FK)
Arm.R (FK)
Arm.L (Tweak)
Arm.R (Tweak)
Leg.L (IK)
Leg.R (IK)
Leg.L (FK)
Leg.R (FK)
Leg.L (Tweak)
Leg.R (Tweak)
Root
Full FK control

Chapter 11: Further Development as a 3D Artist

//No images…