The Ultimate Production Guide for Maya

- The Suite -

Handbook 2

Maya Modelling
and
Enhanced Workflow

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1.4 Modelling Method

It is always necessary to stay with the common modelling methods.

Model with Construction Curves , if you want to create a surface.
Model with a mass , if you want to modify a mass.

1. Constructive : With Curves.
2. Mass Modelling : With Mass, Addtitive, Subtractive and with Curves.

Nurbs, Polygons, Subdivision Surfaces

Option1: Curves, Surfaces from Curves
-> Nurbs Surfaces
-> Polygons
-> Subdivision Surfaces

Option2: Volume Primitives, Subsequent Changes.
-> Nurbs Primitives
-> Polygon Primitives
-> Subdivision Polygon Primitives

Pro-Tip
Always start the creation around the world origin, in other words, at the scene origin, unless you have a certain reason to choose another Workflow Procedure,
i.e. in small environments without animation in the scene, if it is "production-safe".

Explanation:
When Modelling the object, as said above, the object has to stay around the origin, in other words, at the scene origin. This has to be right from the beginning to prevent later Transformation problems.
When Rigging, this is the same.
After Rigging and Character Set, you can move the model and then Freeze Transformations,
and then animate.

If any object has been modeled in any method, then always do
!!!Freeze Transformations!!! to renew its initial vertex positions.
So this will flush the local space into the world space that they fit again.

For Particle Instancing, do Freeze Transformations and then
put it in the desired position around the origin, fitting it to the center of mass,
then do !!!Reset Transformations!!! that the pivot is in the origin and in the center of mass respective.

Local Space:
The pivots position relative to the original Center Position of the objectShape.
World Space, Translate x,y,z : The pivots position relative to the Scene Origin.
Translate x,y,z : The objectShape position relative to the Scene Origin.

Subdivision Polygon:

Proxy

Modes of the hierarchy levels:

Polygon Proxy Mode: Level 0 . Level of the Sorrounding Cage.

Standard Mode: Level 1 to X . Finer Surface Levels .

Crease: Partial, Full Crease. Adapt Surface to Cage making edges hard.

Mirror Geometry.

Attach. Like attach nearby edges.

Known weakness in modelling - Issue and Solution

No Mirror Modelling.
Solution -> Cut piece in Half, When finished Modelling, Position Pivot, Mirror Geometry, Merge Vertices in the Middle.

Additional Workflow Notes

- Now Polygons are displayble with key 2, 3, 4, 5 in different mesh previews with poly cage or without polycage,
with different mesh smooth stages.
When the poly geometry is finished and you want to smooth it, now you can now Modify, Convert, Smooth Mesh Preview To Polygons.
You now can convert almost anything to anything.

Keys:
1 = Poly Mode , 4 = Wireframe , 5 = Shaded Mode
2 = Subdiv Mode with cage , 3 = without cage

Page Up, Down = Subdivision Level.

Mirror Modelling

Cut the Object in Half.
Select Geometry, mirror cut.
Move the Mirror Geometry to the desired Position.

The Selection Reflection Tool does not Work on this.
-> Manually select the desired face of Geo and Mirror Geo .
Do Operations.

You can use the Extrude Manipulator Tool to do the Operations.
But a real Mirror Modelling does not work.
You see this, when you translate to Inside or Outside,
Both Faces will move aside, instead of moving mirrored.

You actually do not have to do a Mirror Cut for Mirror Modelling.

You do the Mirror Geometry or the Mirror Cut Only, when you haved Finished Modelling 1 Side.
For Mirror and Merge 1 Geometry Side,
you can take Both Operation Methods,
either Mirror Geometry or Mirror Cut.

Experienced Issue
Bonus Tools:
MirrorInstanceMesh dose not work.
// Error: Cannot find procedure "bt_mirrorInstanceMesh".

Notes on Transformation

When an object is created in the scene,

you have the

- **Transfom Node** (in the center of the object)
- **Shape Node** (at the Transform Node)
- **The Object Pivot**,
specified as and divided into the Object Scale Pivot and the Object Rotate Pivot
and positioned in the Object Center.
The Object Pivot is the Objects **Center of Mass** or where you want it to be.

2 Spaces are defined as Relations of the Pivot (Rotate and Scale) :

- Local Space:

Local Scale Pivot and Local Rotate Pivot from beginning in the Center of the Object Shape
and always relative to the Object Shape Center (File 018-019) .
Note: Local Space is the Objects "per se" **Center of Mass** or where you want it to be.

- World Space:

World Scale Pivot and World Rotate Pivot.
The Pivot Position relative to the Scene Origin.

The Pivot Naming can be confusing,
assuming, that there are 4 different Pivots,
but there is only 1 Pivot (defined in 2 degrees of freedom) in 2 different Space Definitions.

Object, Pivot, and Pivot Space Operations:

- Center Pivot:

Only the Pivot is centered (if it was moved, if not, then x , or x and z are set to -0) .
The Object Pivot, of course,
is still referenced to the Objects Transform Node in the objectShapes Center.

- Freeze Transformation:

The Transform Node (The Object´s Shape Center) **is set to the Scenes Origin**.

The Pivot stays in the objectShapes Center and
its Local Space values are now relative to the new World Position 0,0,0 .
So object must be around the Scene Origin, before "Freeze Transformations" .

Transform Node -> World Position 0,0,0 .
Shape Node: Stays.
Object Pivot: Stays.