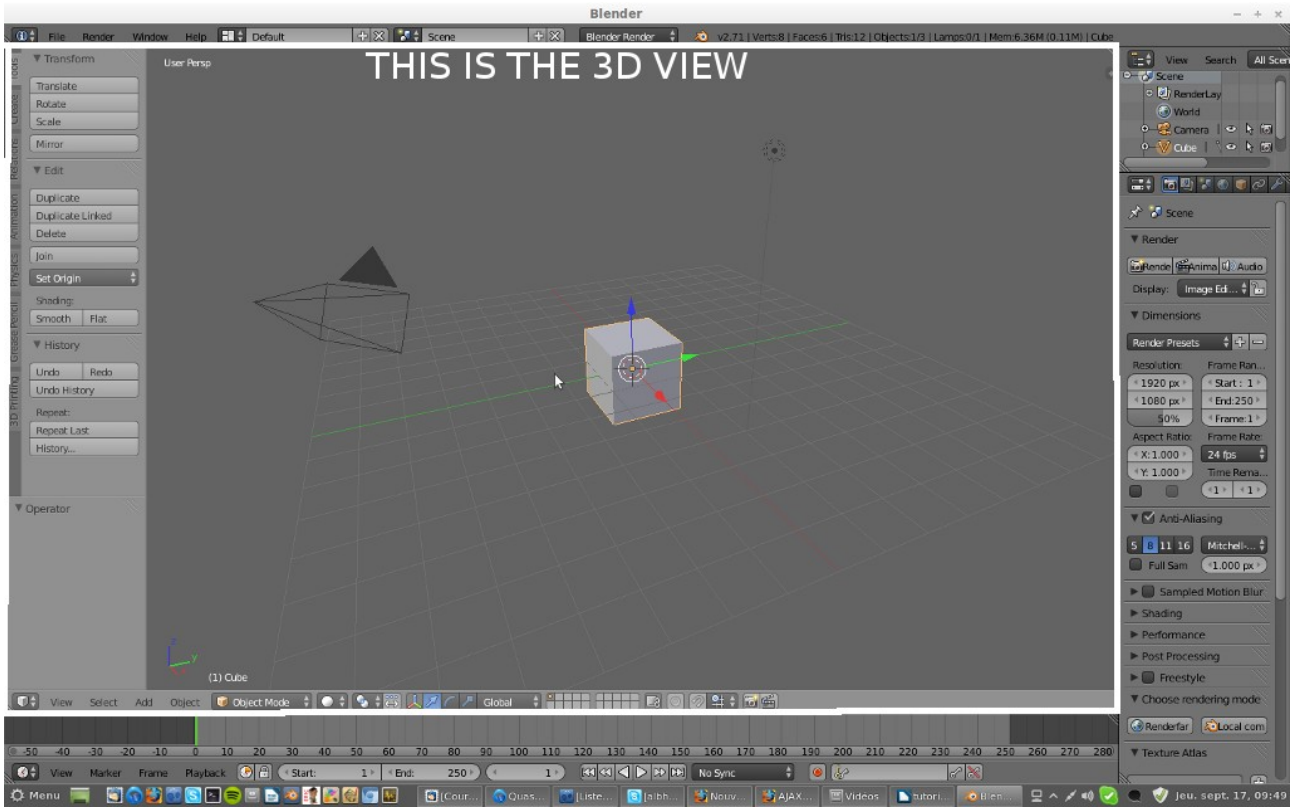
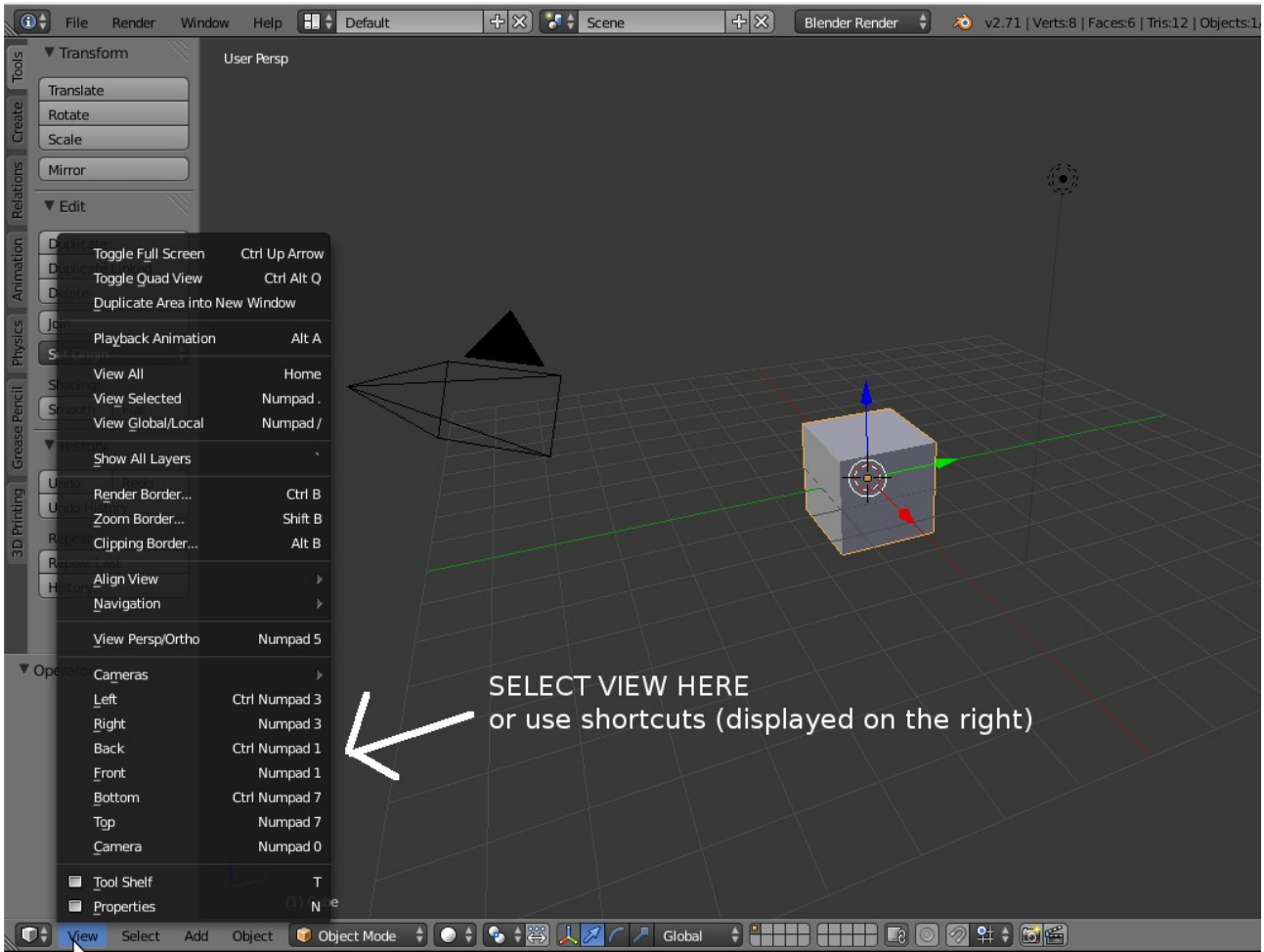
SECTION 1 : 3D EDITING BASICS

NAVIGATING THE 3D VIEW



you can access the different view types through the keyboard's numpad and via the 3D view menu



you get all the different shortcuts in the menu at the right of the action

numpad 7 : top
numpad 1 : front
numpad3 : right

ctrl numpad (7,1, 3) : get the opposite view (bottom, back, left)

Free view mode :
middle mouse button : free rotate view
+shift : pan view
+ctrl : zoom view

OBJECTS MANIPULATION

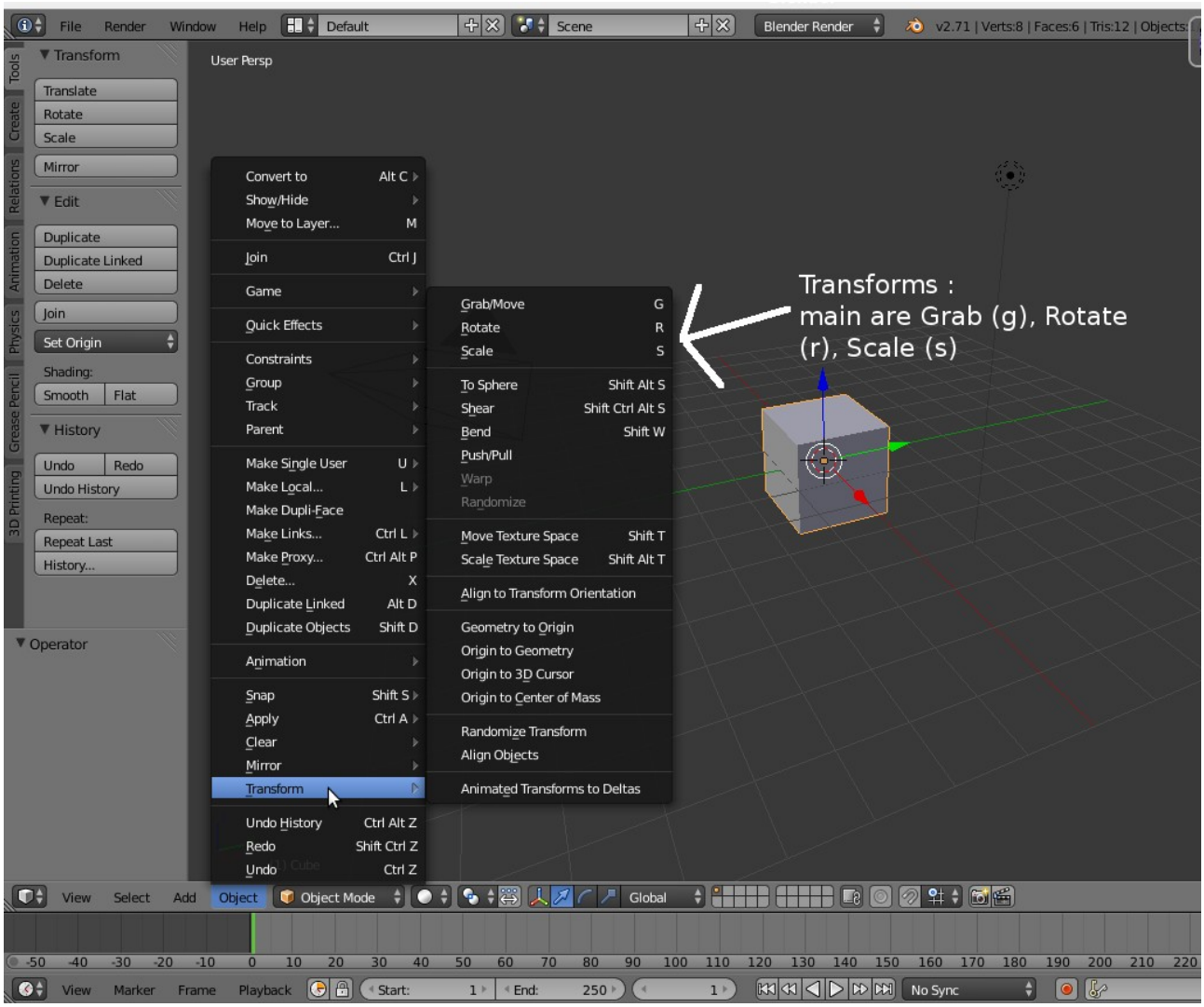
Selection :

right clic to select
shift right clic to select several objects
b for box select : then hold left clic and drag
a to select/deselect all

manipulate the object :

3D view menu : obect → transform
shortcuts :

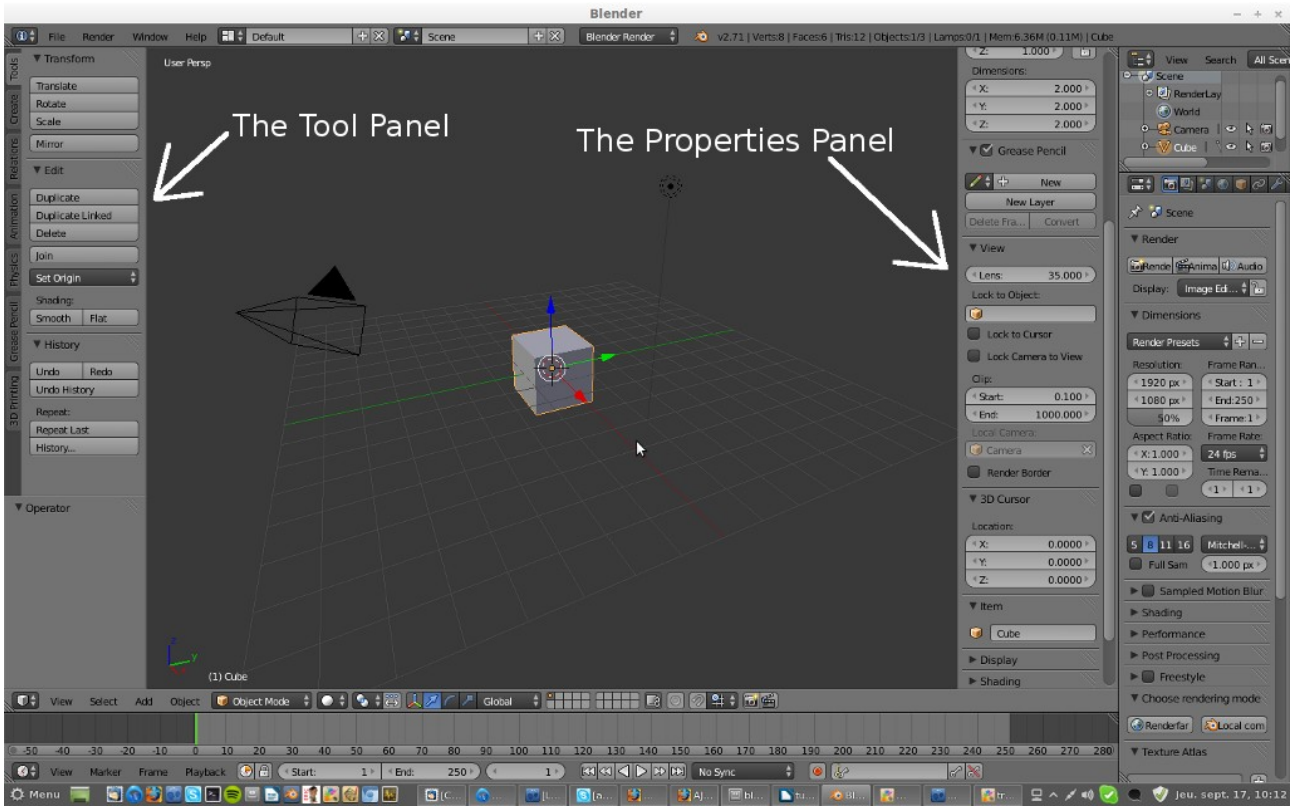
- **g** : grab (translate the object)
- **r** : rotate
- **s** : scale
- **x** : delete



You validate a tranformation by left clicking, you cancel it by right clicking

by default the transformation is free form, buy you can constrain it to an axis by hitting the axis letter after the transformation shortcut
example : to do a translation along the x axis only, hit **g x**

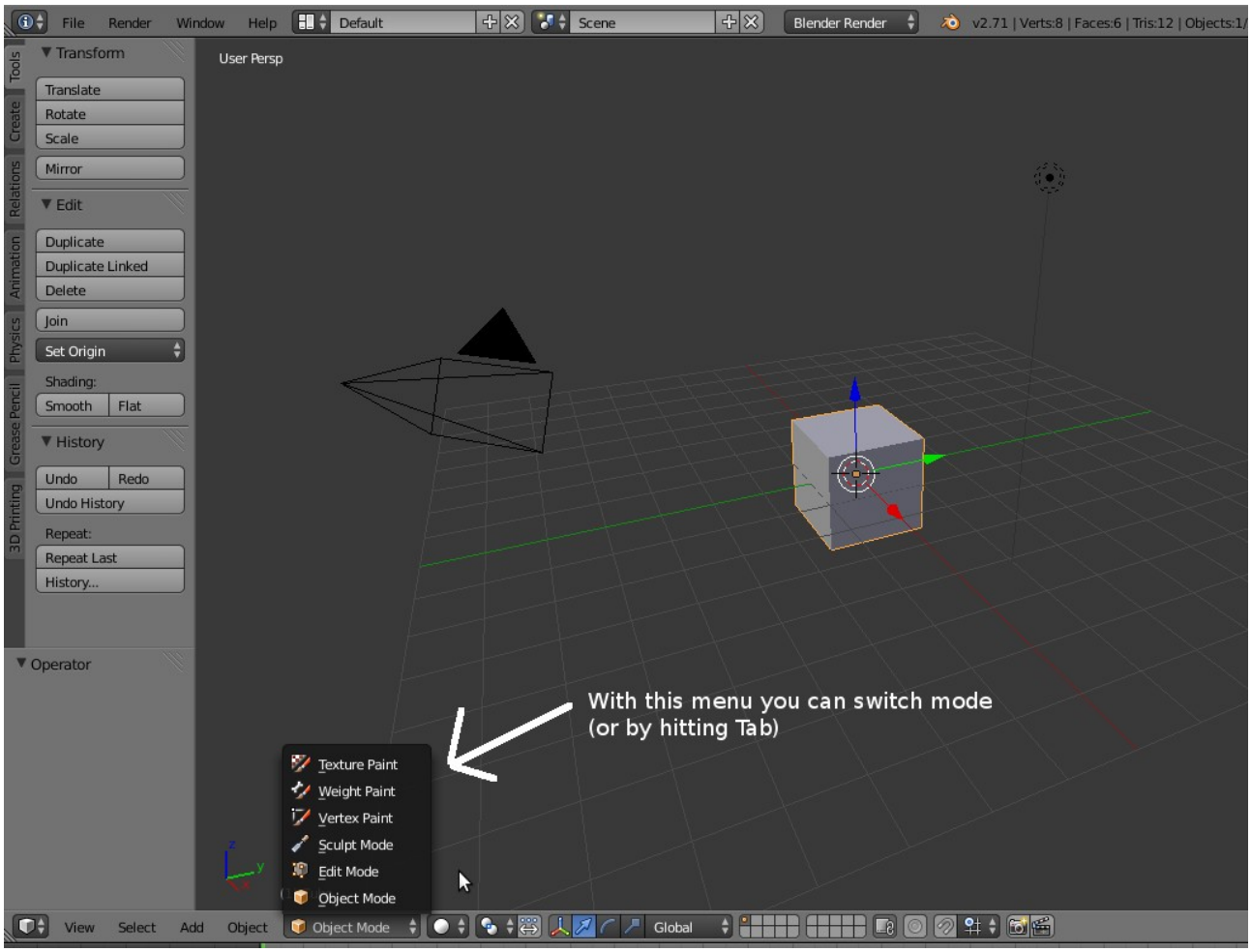
3D VIEW PANELS :
the 3D view panels : there are 2 panels, « tools » and « properties », that hold different options and stuff



you show/hide them with the **view menu**, or with shortcuts :
n for properties panel
t for tools panel

OBJECT MODE AND EDIT MODE :

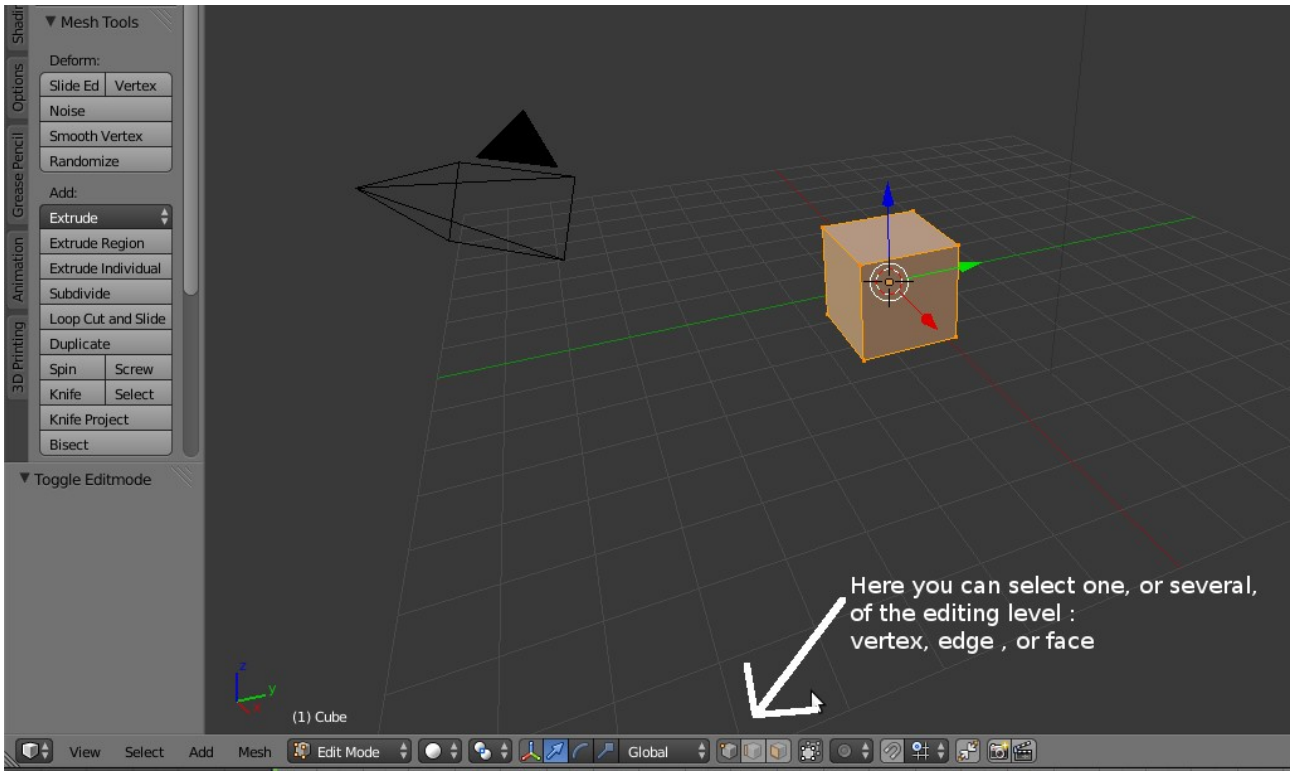
you can switch from object mode to edit mode via a menu, or by hitting Tab.



in **object mode** you manipulate the 3D object as a whole : in the case of the base cube, you grab scale and rotate the cube as a whole. There are not much you can do in terms of transformations appart from these 3. Object mode is mainly for managing different objects.

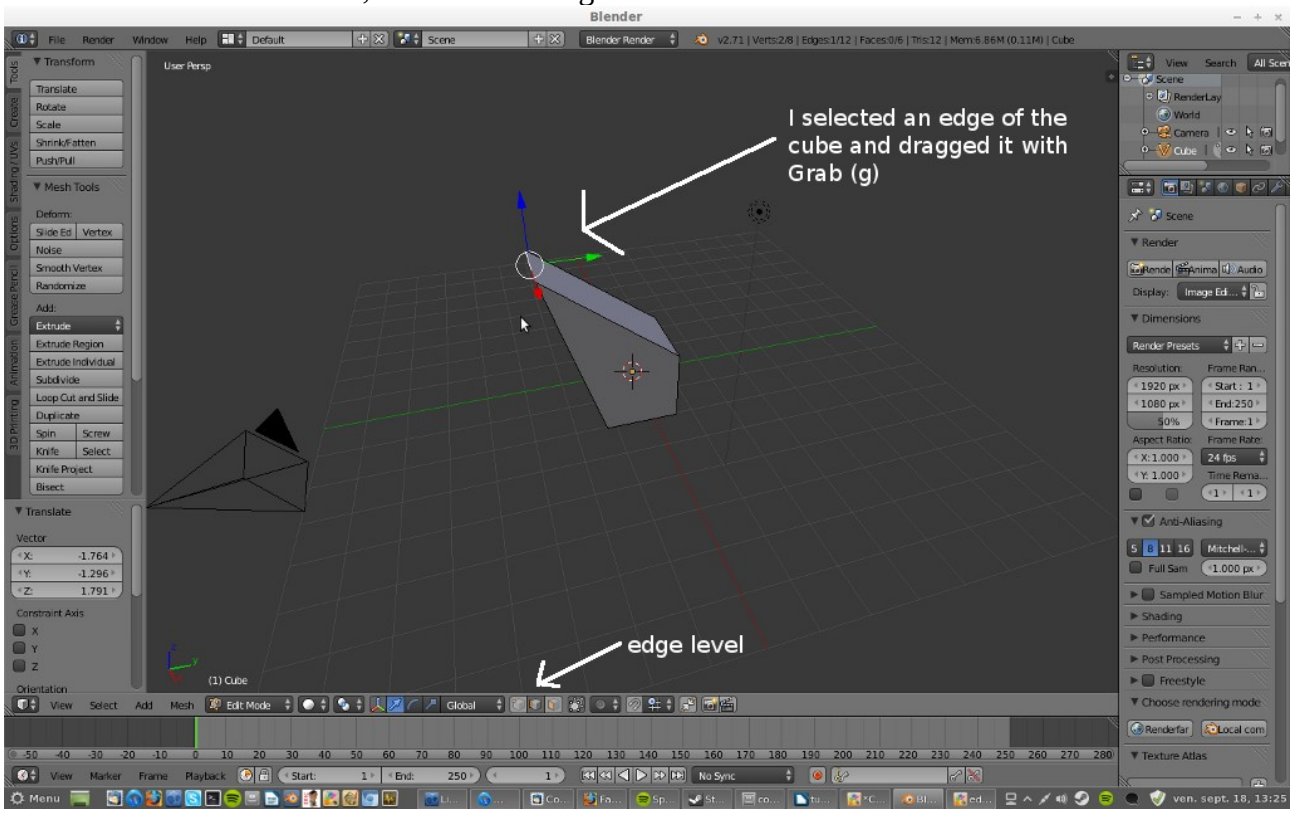
In **edit mode** you do most of the objects transformations.
There are three levels of editing. To understand these 3 levels you need to understand how a polygonal 3D object is built.
The base level is made of **vertex/vertices**(plural). They are the « corners » of the cube.
The second one is made of the **edges** , the lines that connect the vertices together.
The 3rd one is made of **Faces** or polygones, the surfaces delimites by the edges.

You select the editing level through this buttons, that appears only in edit mode :



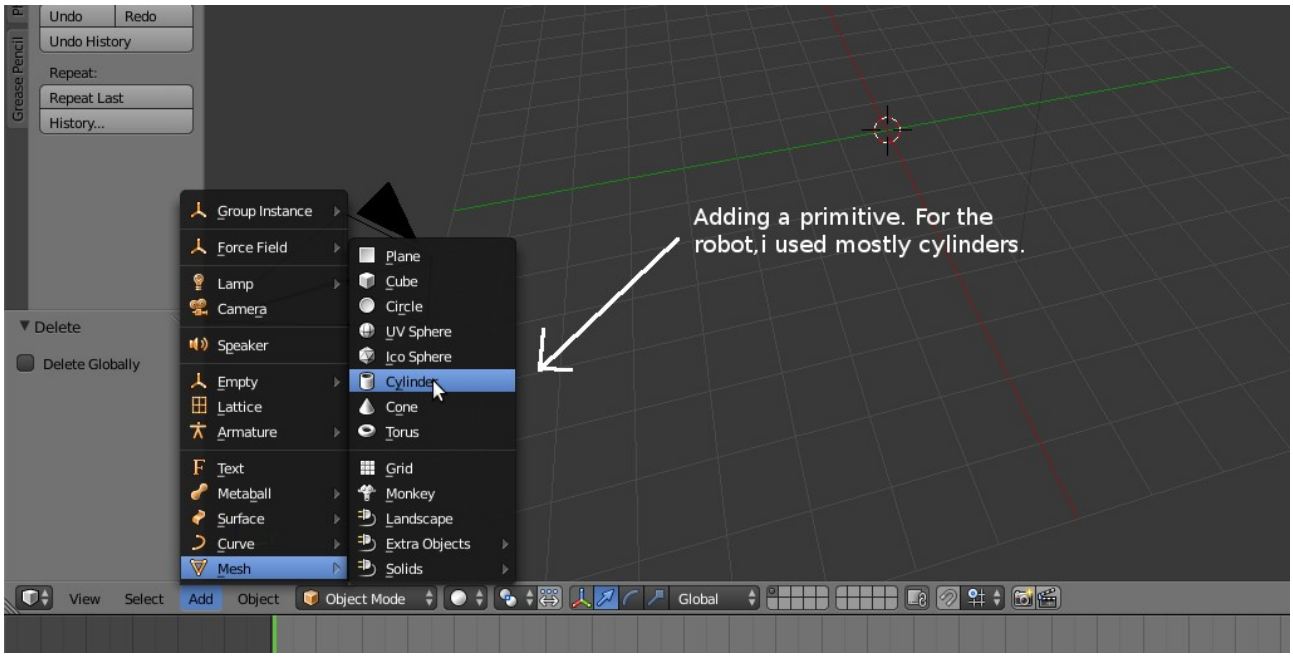
Note that by using shift + left clic you can select several editing levels.

In edit mode you can apply the main transformations (**g**rab, **r**otate, **s**cale), and many more, to vertices, edges, and faces. Same as in object mode, you select these elements with right clic, apply a transformation with left clic, cancel it with right clic.



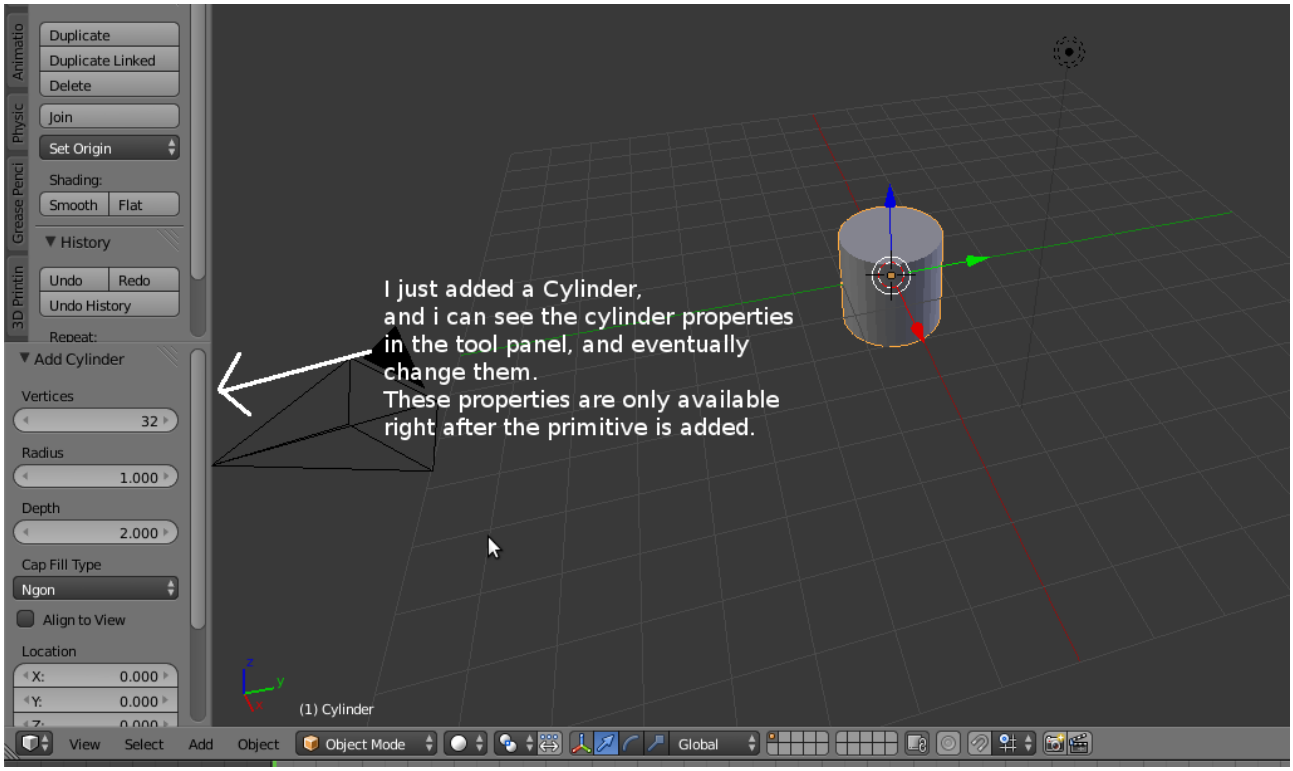
3D PRIMITIVES :

By default you start with a cube, but there are several other objects you can start with (and many more through addons): **spheres**, **cylinders**, **planes** are the ones i use the most. These base objects are called primitives.
You add them via the 3D view menu **add->mesh**



When adding a primitive, it is important to have the **tools panel** open(**t**), since it will show parameters of the primitive.

This parameters section will disappear as soon as you apply any transformation to the added object.

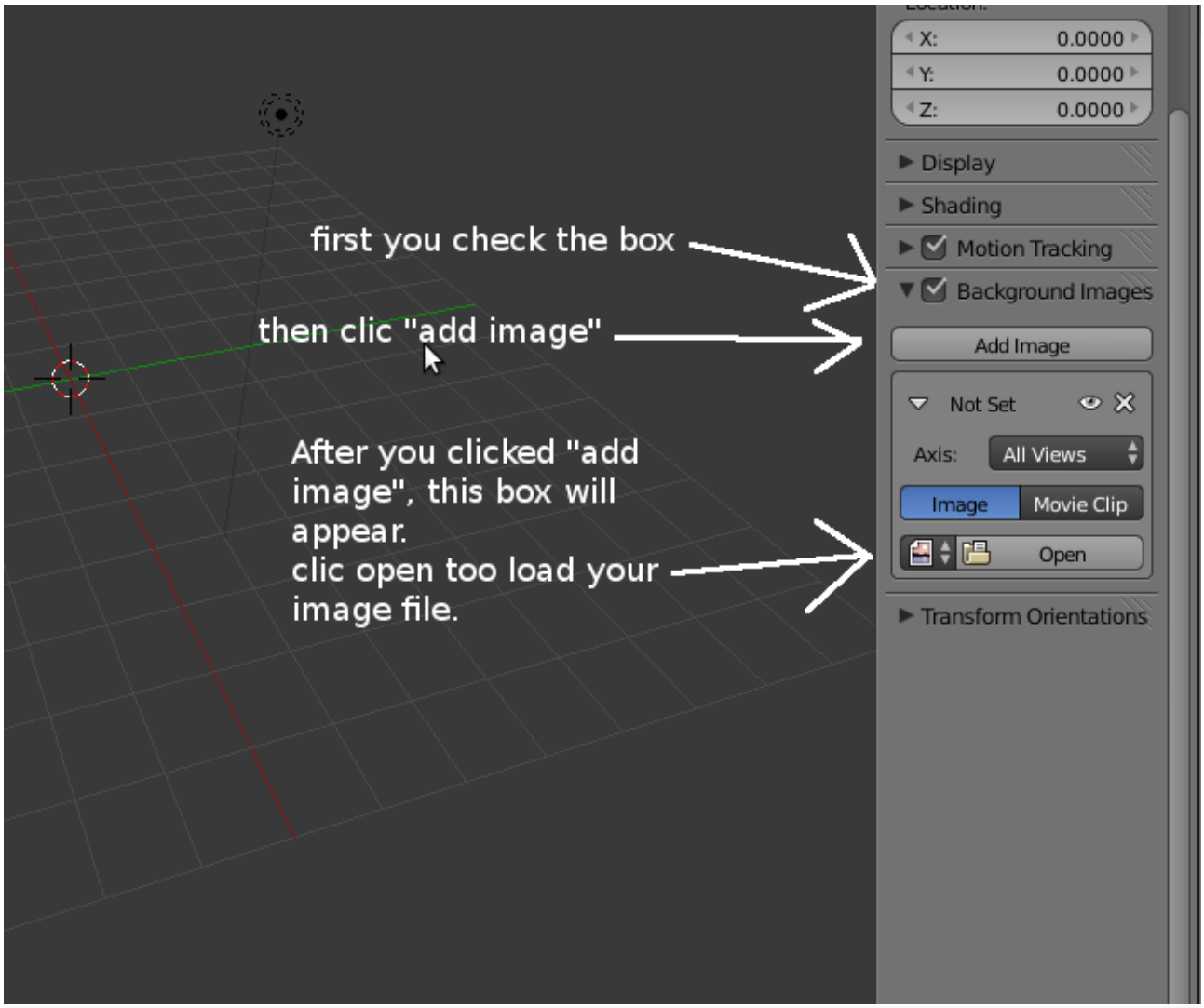


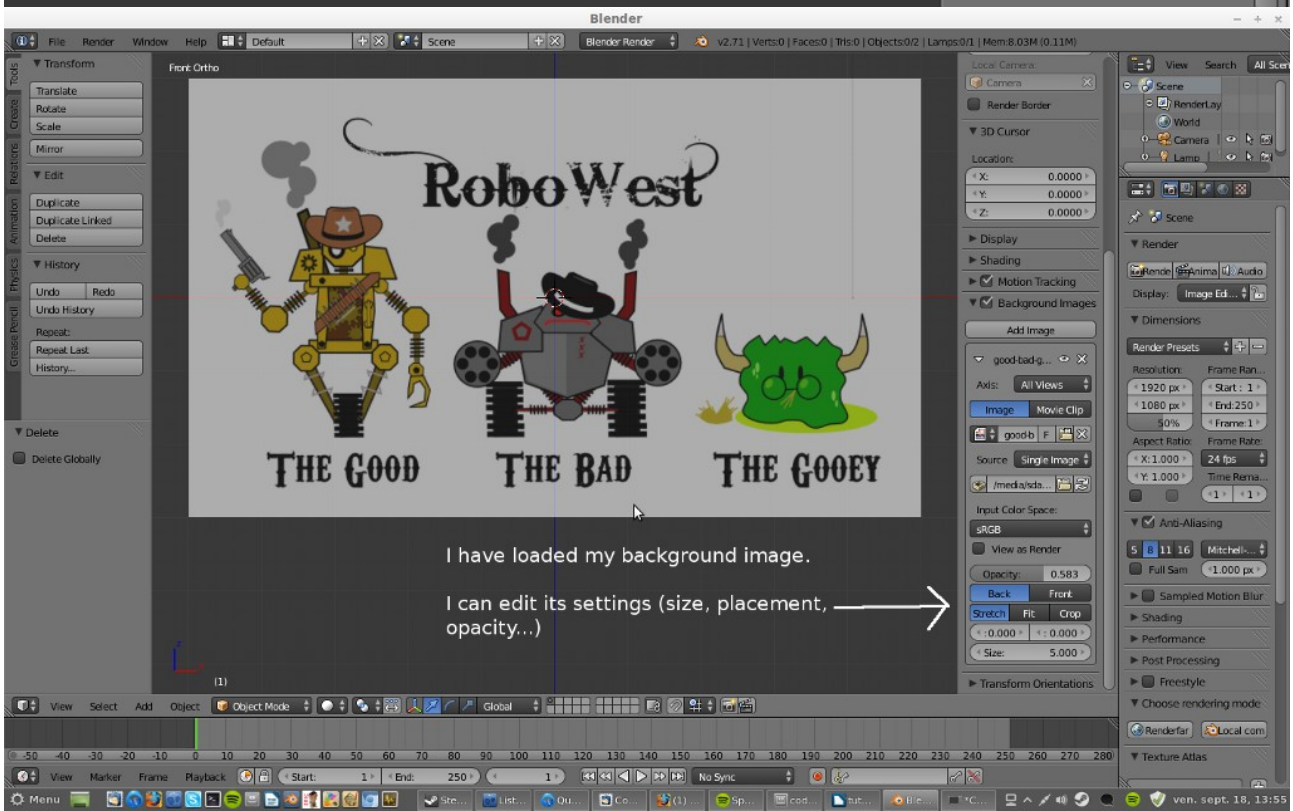
SECTION 2 : LETS MAKE THE ROBOT

Setting :

you can add a **background image**, to use as a blueprint, in the 3D view

you do this via the properties panel, « background image » section





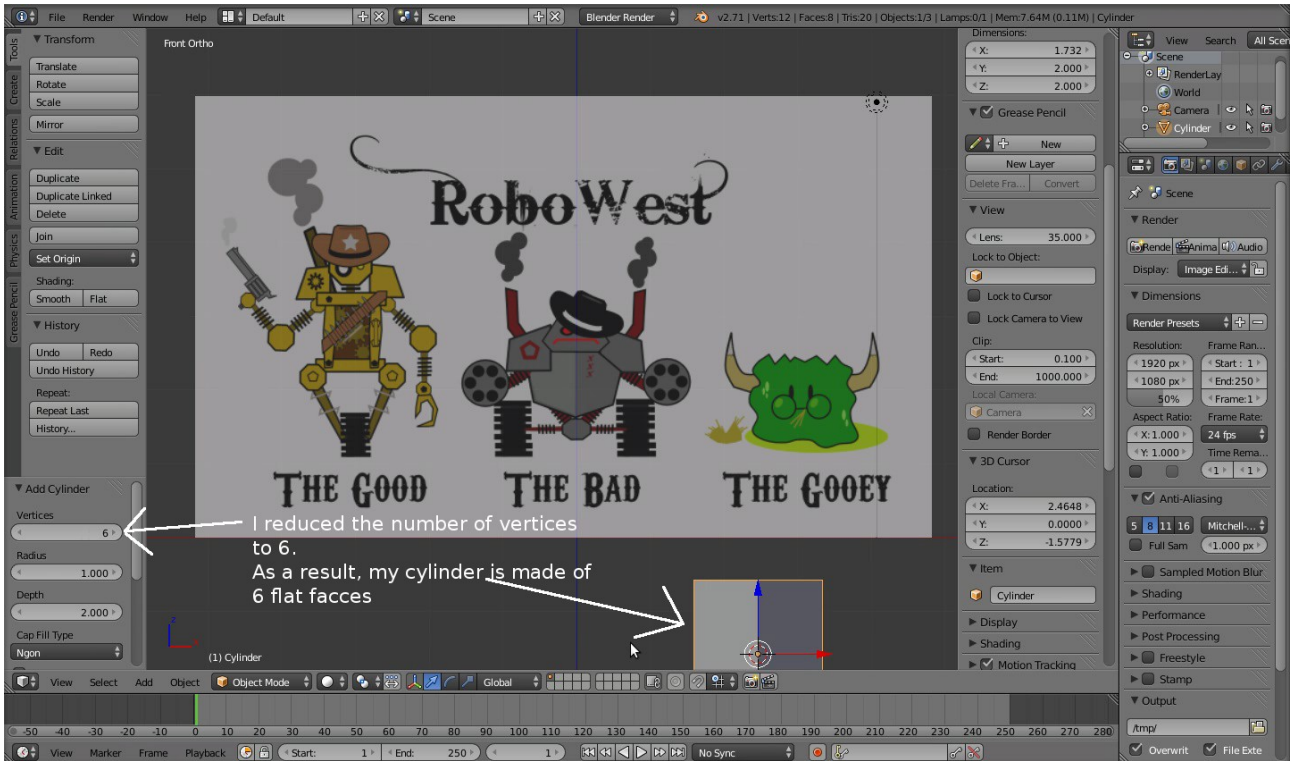
For the robot, i used mostly **cylinder primitives** :

Example : the body

select the front view

Add a cylinder

in the tools panel, reduce the number of vertices to six



move the cylinder till its in front of the body

go into edit mode (**tab**)

hit **z** to set the mesh transparent

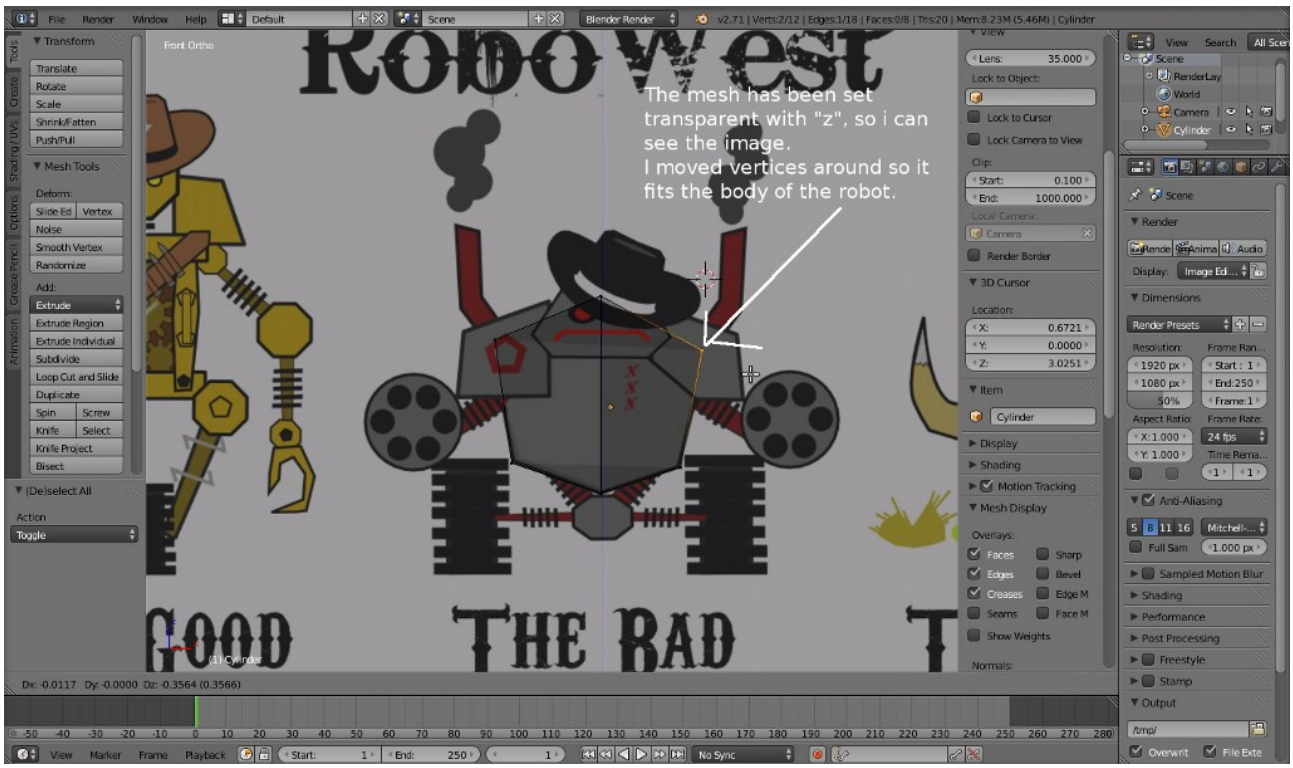
select the vertices level

select all vertices (**a**)

scale the vertices along the x axis so the shape fits better horizontally (**s x**)

do the same along the z axis so it fits better vertically (**s z**)

still in front view box select (**b**) vertices (so as to select the front vertices with the back vertices) and move them around till satisfied.


The mesh has been set transparent with "z", so i can see the image.
I moved vertices around so it fits the body of the robot.