

Advanced FPS Kit Tutorials Weapon Modelling (Part 1)

The most important part of any first person shooter game is to introduce a variety of colorful and creative weapons to suit the needs of your game. What differentiates the game is the type of weapons and their individual behaviors. This tutorial is probably one of the most requested I have been asked by people before, so today I will bring you this tutorial.

This is a fairly complex and lengthy process and it will take some time, effort, and practice, to get it down. So don't get frustrated over it, this took me quite a few attempts to get "good" at it and there is still room for improvement. Some people are gifted at modelling, others will struggle, but this should provide enough insight for you to expand into further avenues of weapons. Even with practice, I've still got work to do, but after these tutorials, you should be able to do things like this:



Since this is a complex process, I have broken this tutorial into separate parts to help you along the way. Please be sure you fully understand each part, and are following along before you jump ahead, missing one little thing can set you back quite a way.

I will be using Blender (2.68) <http://www.blender.org/>. While new versions come out fairly rapidly for this software, the overall control set will remain unchanged. Blender, unfortunately, is very unforgiving to new users who cannot learn to master hotkeys. I will teach you the important ones. Look for **Red Text** to indicate hotkey usage.

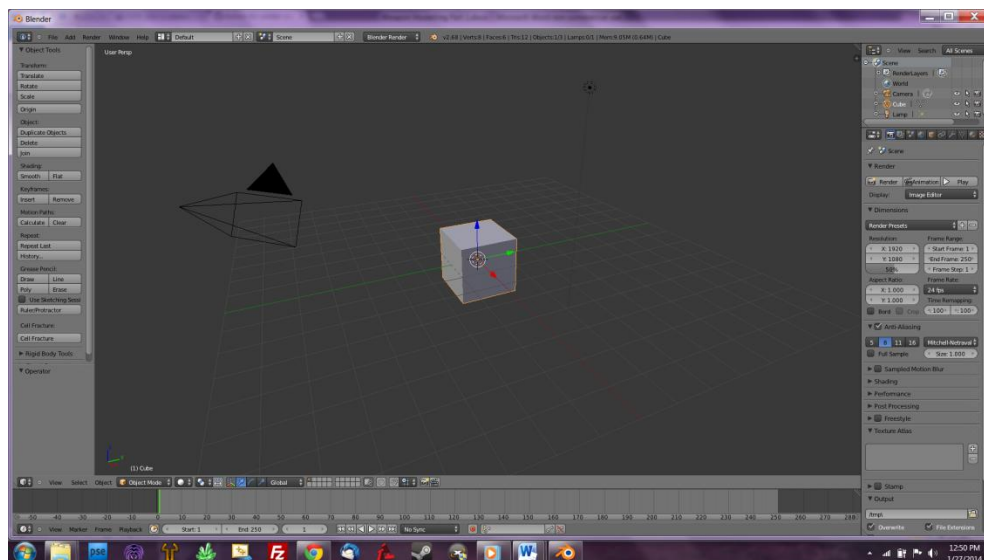
Next thing you need to know is that these tutorials will only be covering the Third Person perspective models. Doing a tutorial on the first person perspective would require way too much work, since re-doing the player model would essentially be required as the animations won't properly load in blender. With that out of the way, let's get started!

The first step, after you install and get everything loaded up, is to pick a weapon you want to model. As it so happens for my own purposes, I'm in need of an RPK Machine Gun for my game, so this is the gun I will model. Hop onto your favorite image searching tool (cough, google, cough) and find a GOOD image of the gun. Now, some weapons won't be easy to do this for as available images may be lacking a bit, other will be perfect. Ideally you want an image on the side view with a nice, big, resolution. This is the RPK Image I have:



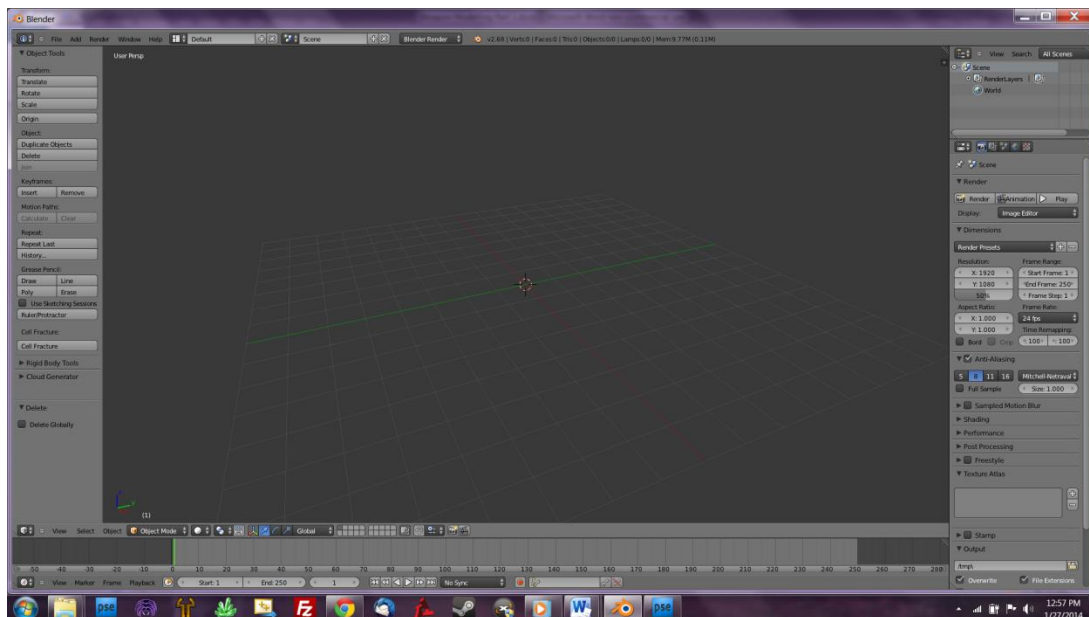
The size of this image is 3812 x 2154 (I've included it in the tutorial files folder if you want to follow along). Now, the first and most important practice is to SAVE and SAVE OFTEN. In blender, you can select File->Save, or **Ctrl+S**.

When you open blender up, you'll have a window that looks like this:



You're probably already pulling hair out at the complex interfaces, hey, I'm not blaming you. I pretty much did the same. So let me explain everything first, then we'll move on. You're viewing a "Scene". The scene contains your "Objects" which in basic terms is in essence, the model itself. On the Left, we've got your modifier tools and your modelling controls, we'll get to those later on. On the right, we've got general controls, as well as your scene controls. Those will come into use especially later on when we texturize the gun.

The first thing we want to do here is clean up the scene so we have a nice empty space to work with. And here comes the hotkeys. Start by pressing **A** twice. This will select all of the objects in the scene. And to delete them, press **X** and then click OK to proceed. Just a quick note here, don't left click, like... ever, unless you're selecting an option. Left clicking in the scene moves your cursor, and when starting out, we need it at the origin. Now we have a pretty blank area:

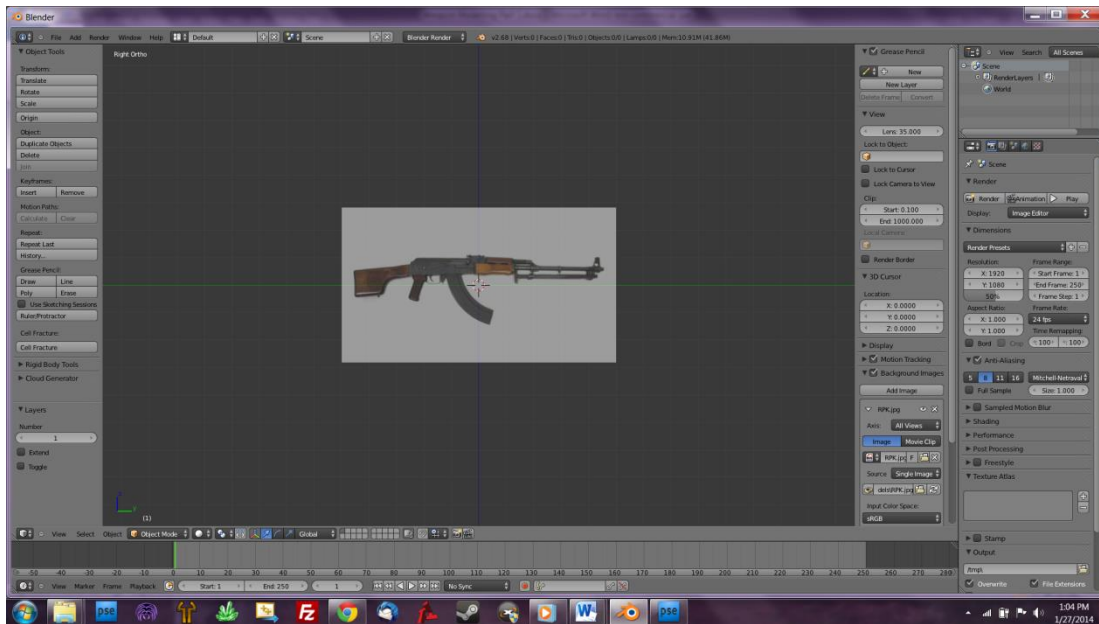


Awesome, right? Well, it's empty. Let's change that. First thing we want to do is to get into perspective, or the correct view. To do so, we'll use two hotkeys: **NUMPAD 3** and **NUMPAD 5**. This is what we call a side perspective. You should have the green and blue axes on your screen (Y and Z respectively).

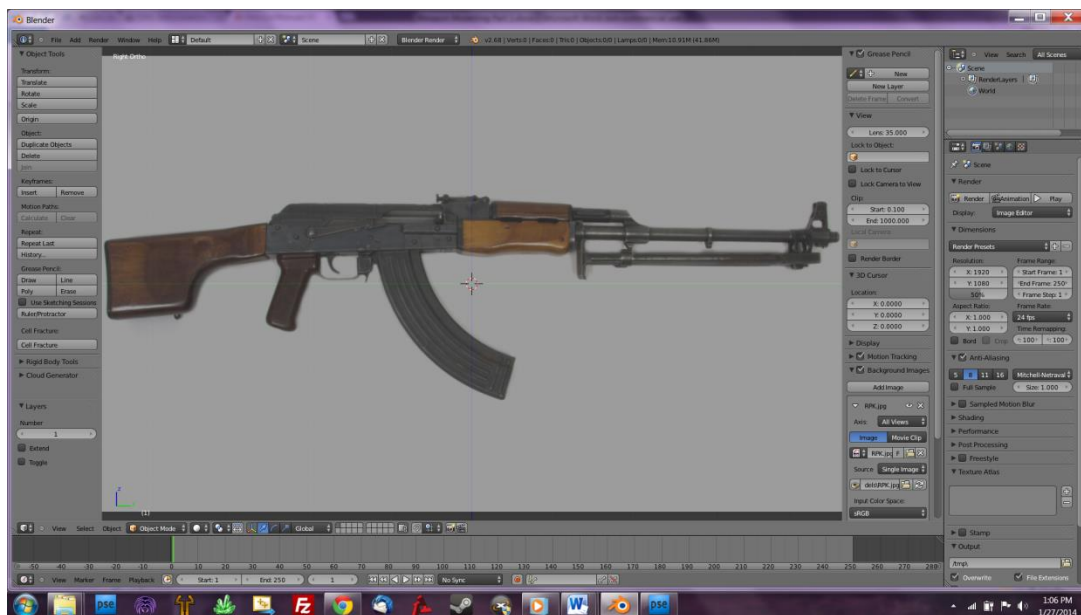
First note, the bottom left corner of the scene window has a useful notice for you, which way is Positive on your axis's, this will be especially important at the end when we're exporting the model.

Now, let's get to work! Remember that reference image you downloaded? Well, it's time for it to appear in Blender. In order to get a reference image, we'll need another option

menu, to get it to open, press **N**. You'll see an option for 'Background Image'. Select it and click add image, then load in your image. My window now shows this:

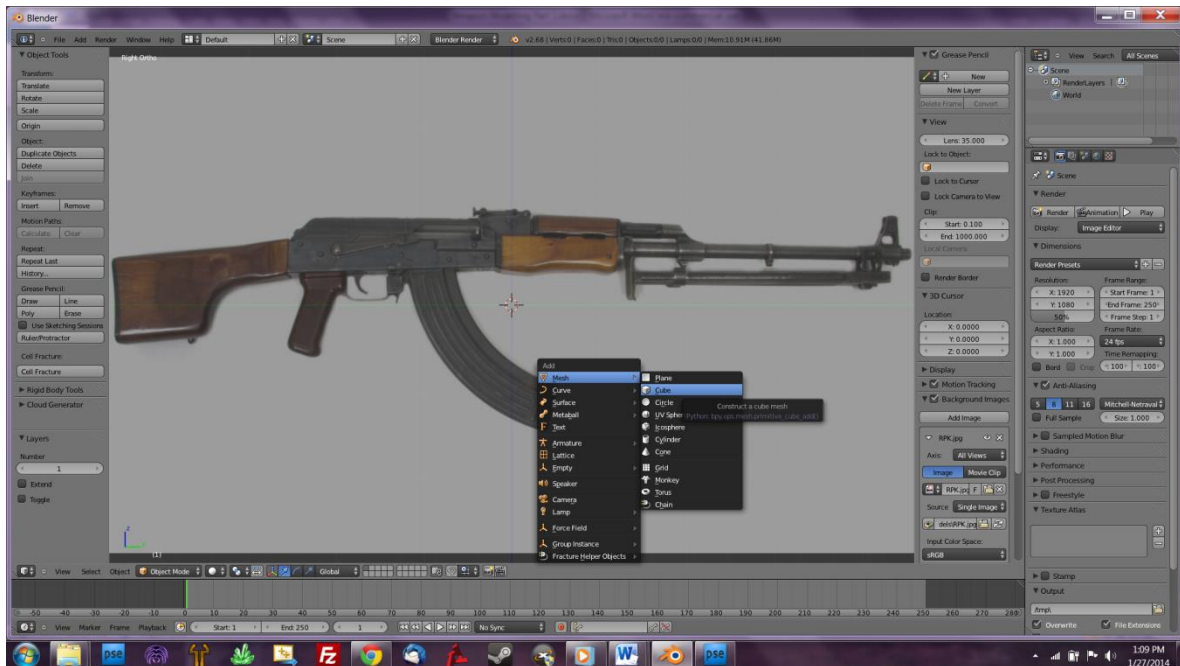


We can zoom into this to make it a little bigger by using the mouse wheel (assuming you have one), if you don't have one, you can use the **NUMPAD +** or **NUMPAD -** to zoom. Zooming in should quickly show you the importance of having a good image.

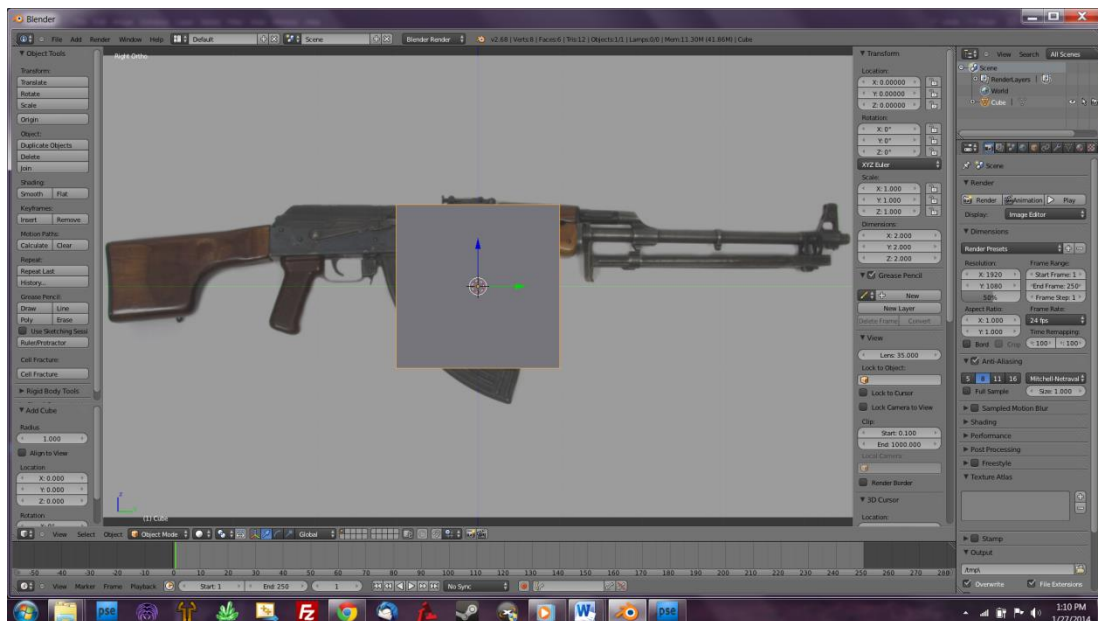


Now, for third person models, we don't need to worry too much about "pieces" of the gun, unless you feel like taking a dab at third person animations later on, but for the purposes of keeping texturing easy, I'll separate the gun into two objects, the 'gun' and the 'clip'.

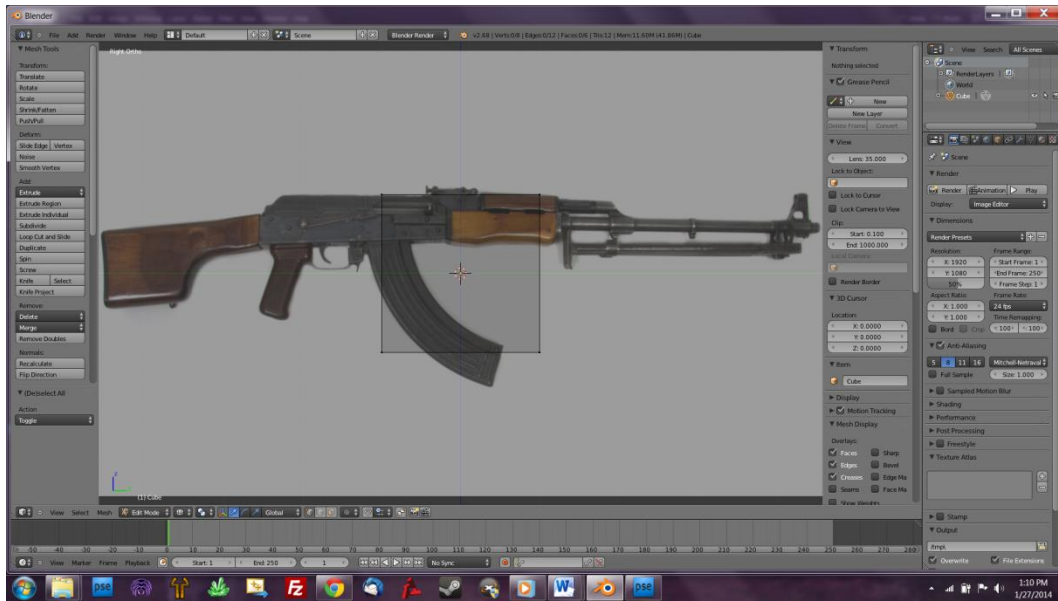
To kick things off, I'll start with the Wooden Back of the gun. To add an object to the scene, press **SHIFT+A**. We will be using Cubes, so select Mesh->Cube.



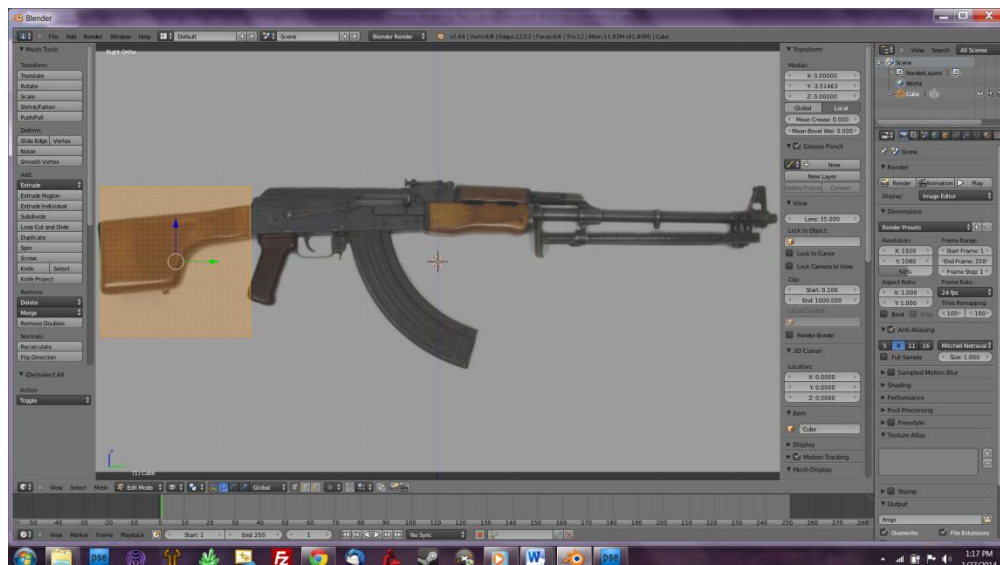
Now you'll have a pretty, and big, cube on the scene.



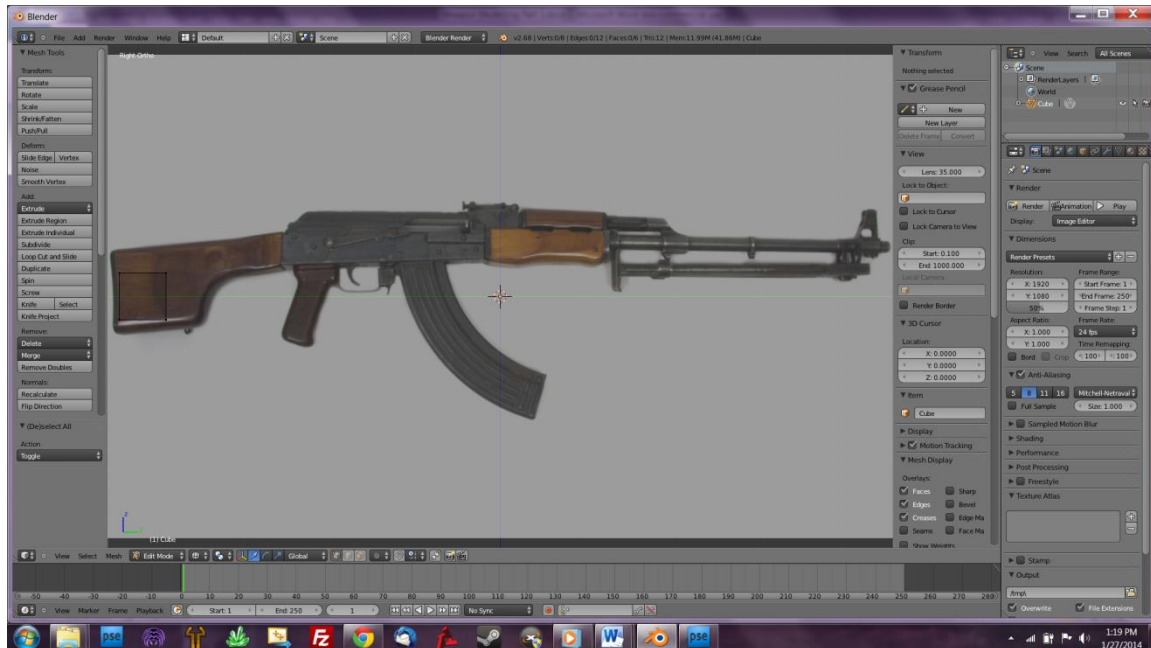
To edit the cube, we need to be in "Edit Mode", press **TAB** to enter Edit Mode. The cube will now change to a grid like shape, but it's still solid. It would be nice to "see through" the Cube. To do so, press **Z**. And finally, press **A** to de-select everything. After all of that, you'll have something similar to me:



The first tool I'm going to teach you is the "Circle Select". To access it, press **C**. Your cursor will become a circle. You can use the mouse wheel or zoom controls to adjust the size of the circle. To select points, simply left click them (yes, you can left click 😊) and then right click when done. I first want to move my cube over near the wooden handle, so I'll select the cube points and move it over (You could just have easily pressed **A** to select everything). There are two ways to move an object, first is to left click the axis arrows that now show on the object and drag it along the axis, or by pressing **G** (grab) and then moving your mouse to move the object, Right clicking while in the grab tool undo's the action, left clicking applies the new position. So, I'll move my cube to position:

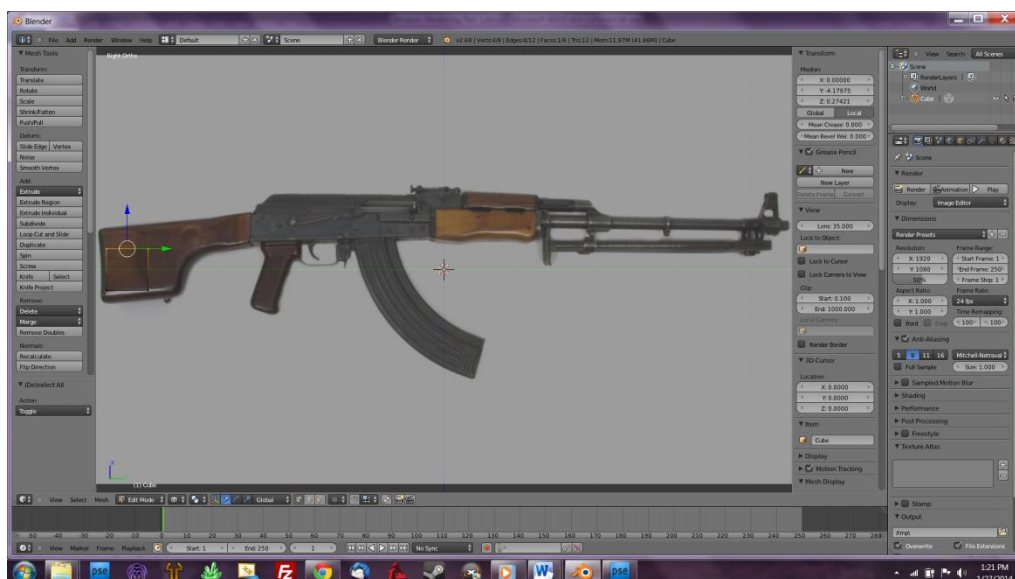


Next, I want to scale the cube down a bit. To scale an object, press **S**. To scale along axis's you can press **S** then **X**, **Y**, or **Z** to scale along an axis, this same concept applies to the Grab tool, Go ahead and practice these tools out a bit to get them down, I now have this:

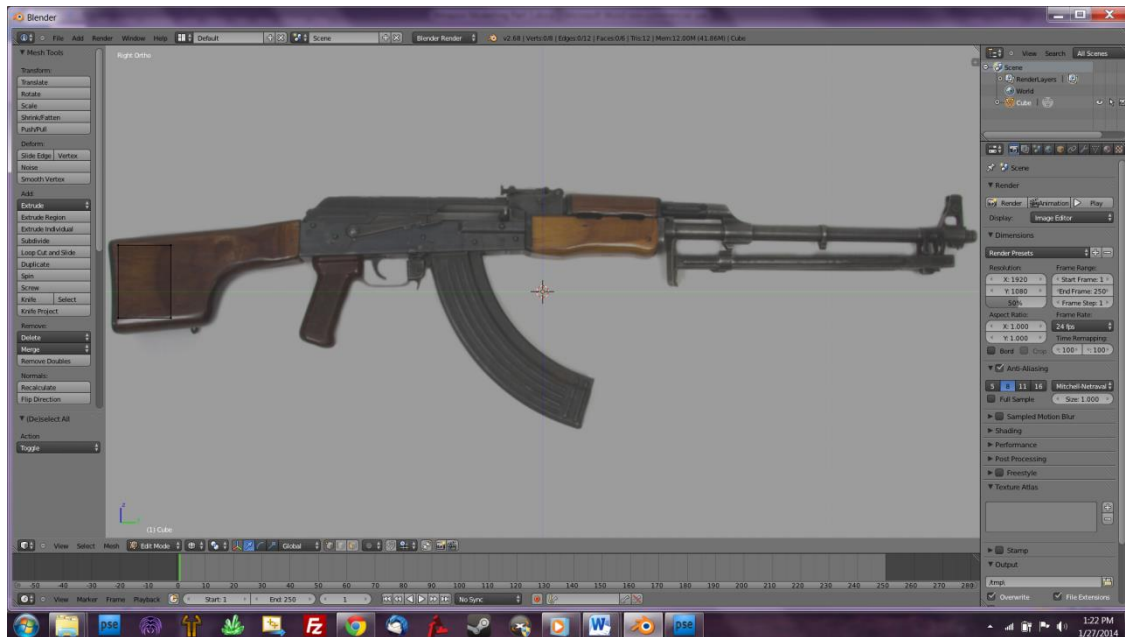


So, while messing around with a single cube is nice, it won't get us very far. So, let's jump into the next part of modelling, which is... well... Modelling.

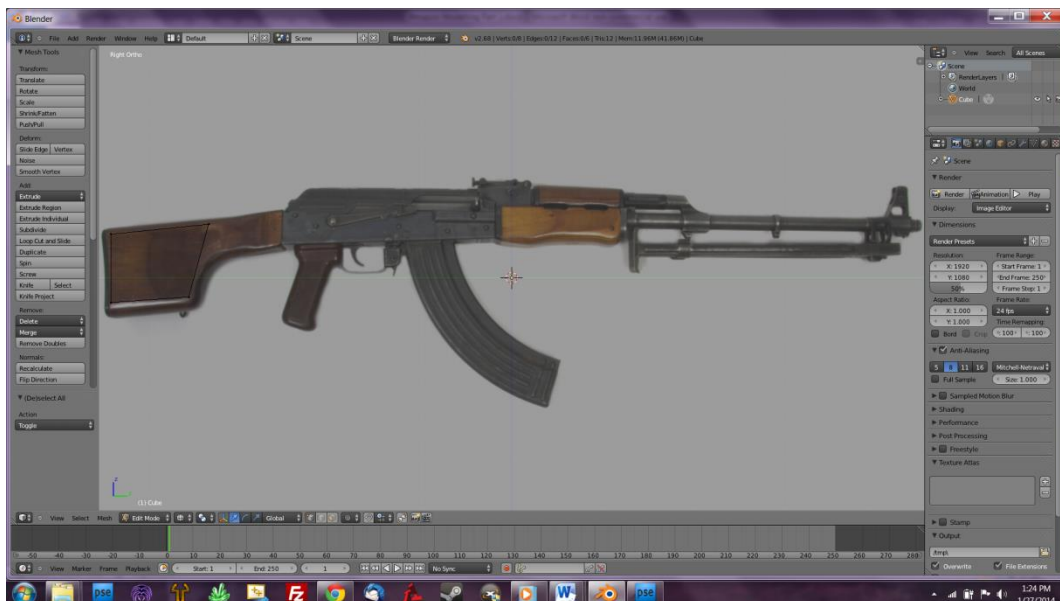
Use the Circle Tool (**C**) to select the top left, and top right nodes of your cube. Since we are in 'z' mode, you will also select the nodes behind it.



And drag those to near the edge of the top (we'll add some more pieces later on to make the gun look smooth).

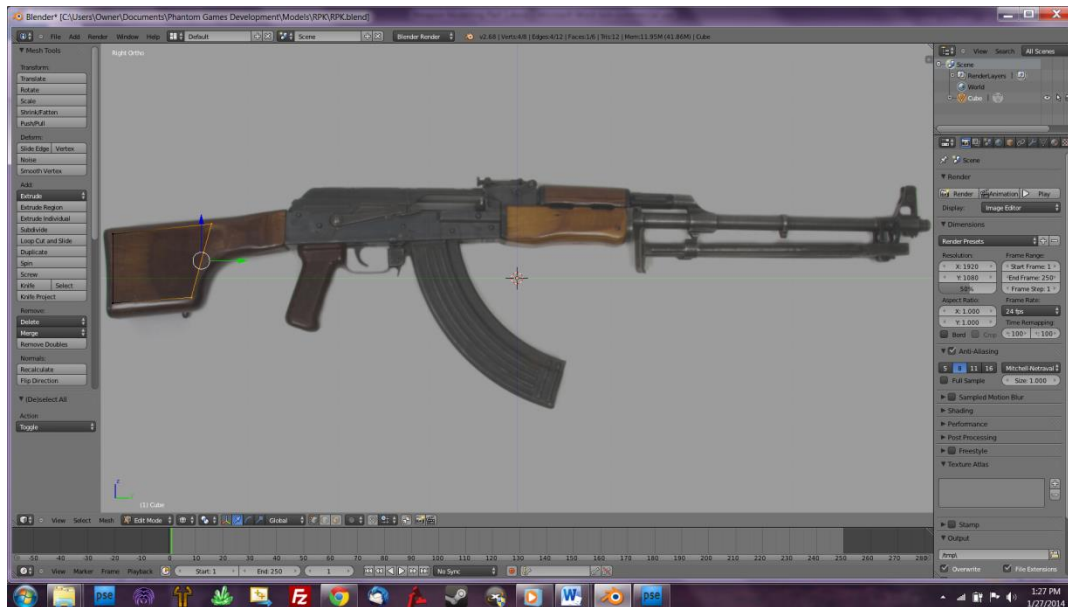


Now, we'll want to use this cube to exploit as much space as we possibly can, so select the right top and right bottom corners individually now and perform similar actions (I also pressed 'N' to close that option menu I had earlier). When you're done with those two edits, you should have this:

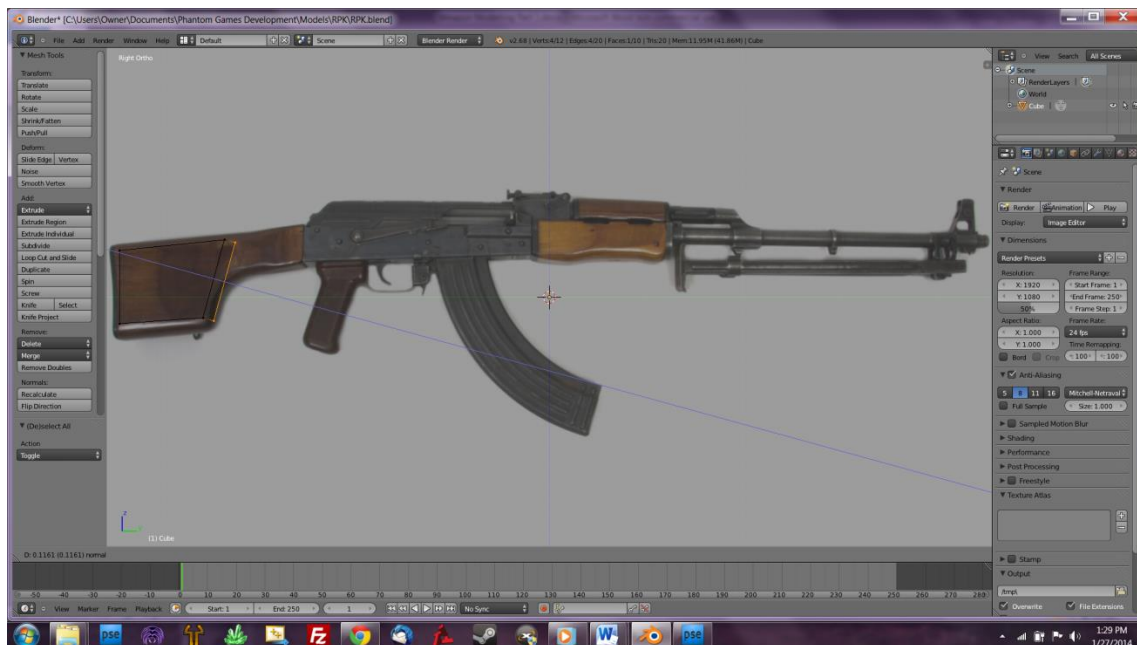


Doesn't look very 'Cubeish' anymore, does it? Well, that's the point. We're using cube nodes to create different shapes. But now we've got an interesting problem, as you can see, I can't simply drag my cube corners any further to finish my handle, and it looks

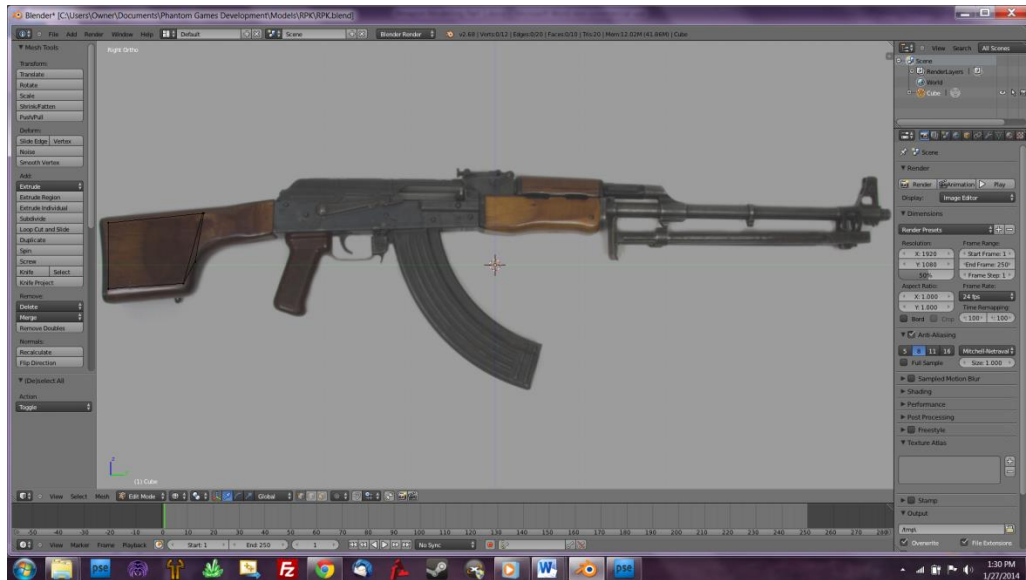
square at the ends currently. Well, it's not a hard problem to solve, I just need another cube. But instead of going back into object mode and spawning another cube, let's simply "Extrude", the existing one. Select the two left edges:



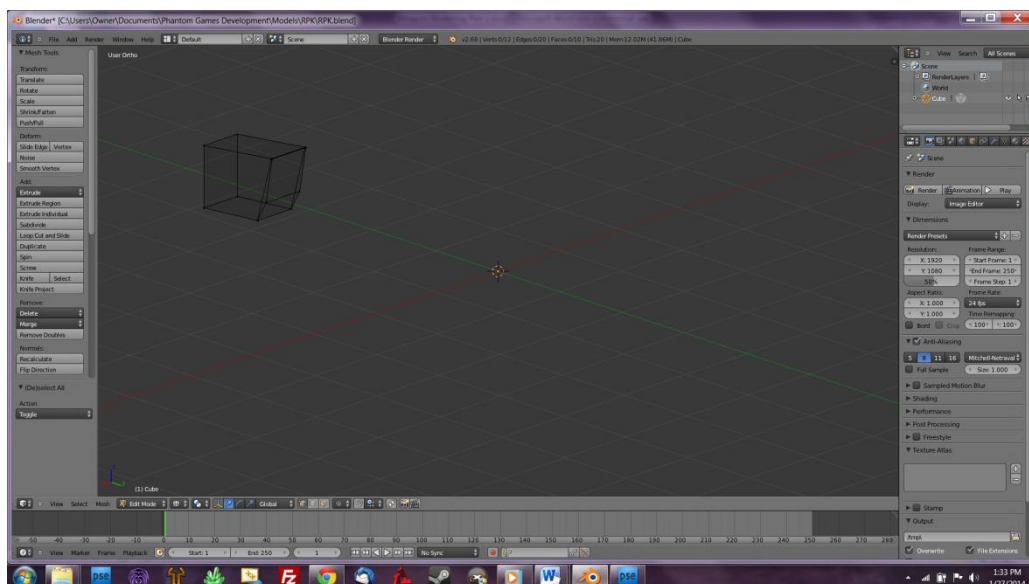
To extrude, Press **E**, the extrude tool has the same axis option as the grab and scale tools in case you need that later, but for now, let's just extrude a "little" to the right, so move your mouse a little over to the right, and left click to apply:



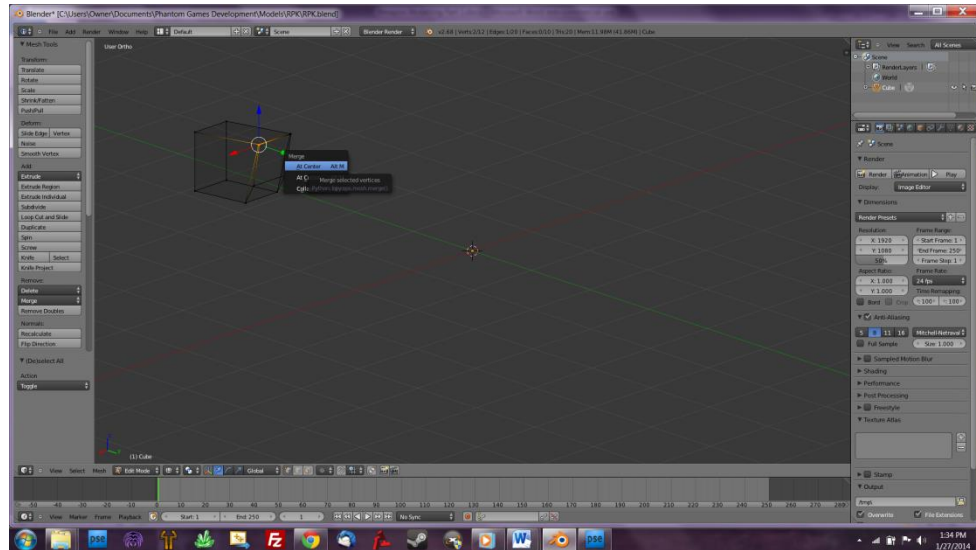
Now, let's use the bottom node to move up a little, so select the singles and get something like this:



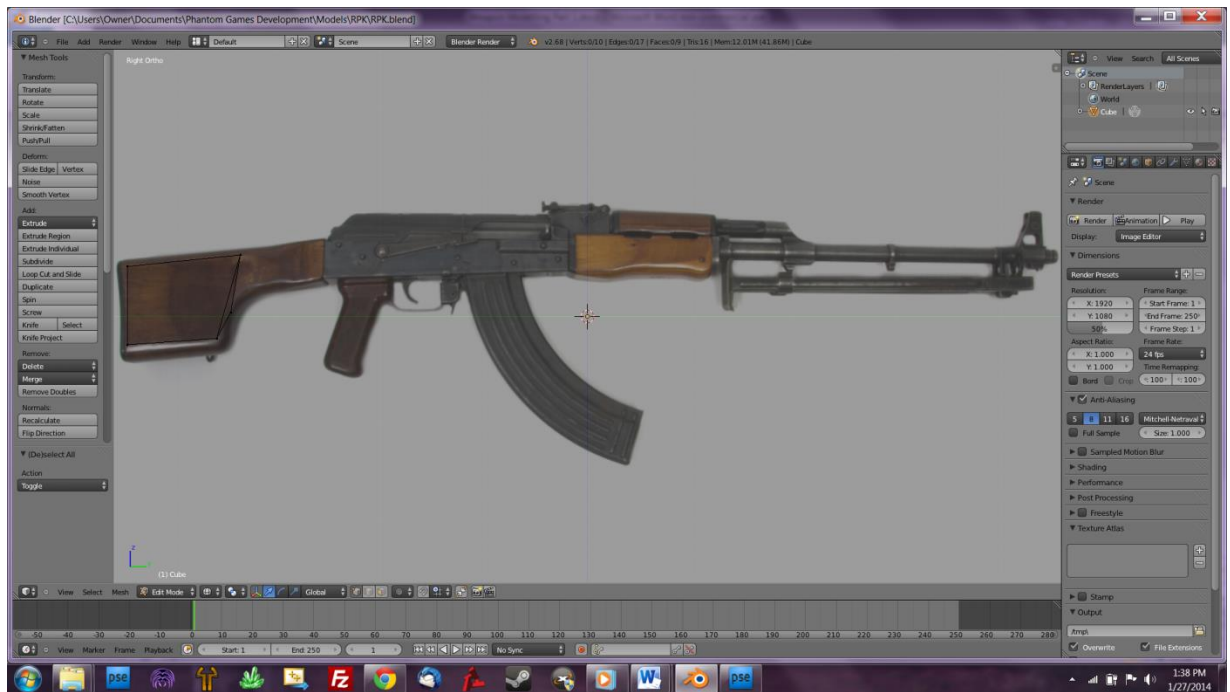
Notice how I moved the top nodes extremely close to the other one? That's because I'm going to perform a task called Merging, or combining two nodes into one. The opposite action is Subdividing but I'll cover that one later. There's just one little problem, if I tried to merge in this view I'd combine four nodes into one, and that would be bad. So, let's move into a custom perspective where I can see things a little better. By holding in the middle mouse button and then moving the mouse, I get into a custom view angle that looks like this:



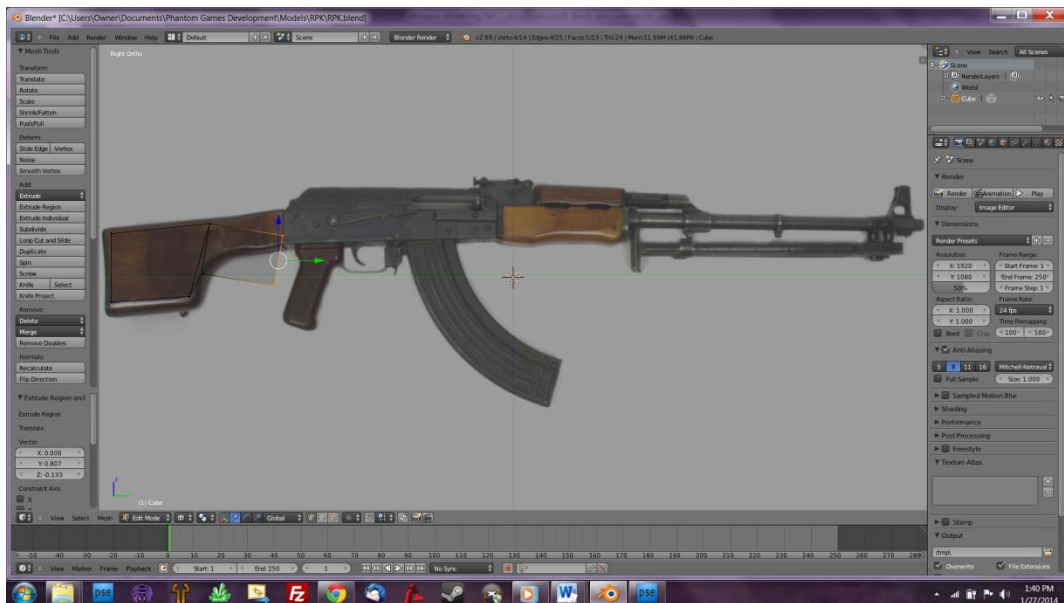
Now to merge the nodes, I need to select the two nodes I want to merge (the ones close together) and then press **Alt+M** to open the merge menu:



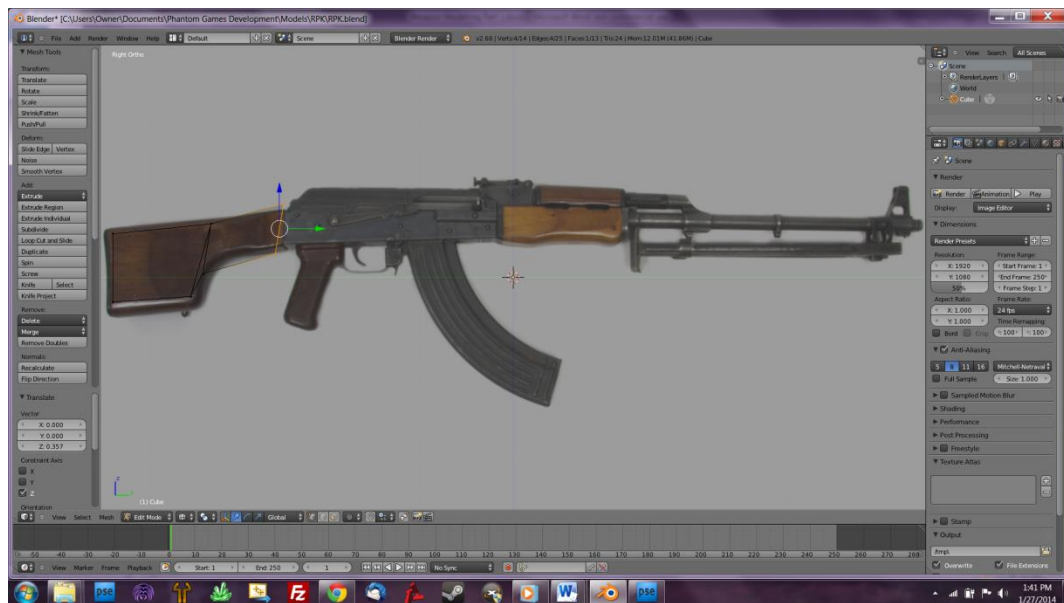
Select the “At Center” option for both of the nodes to be merged, and then de-select the single (now merged) node (A), and do the same for the other two nodes. Once done, press **NUMPAD 3** to return to the side view. Now I’m back here:



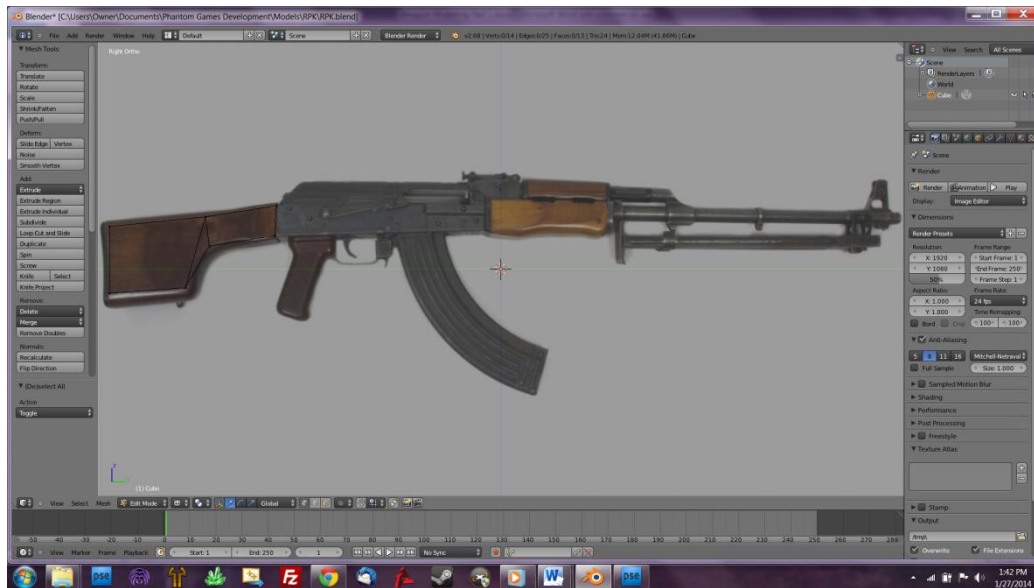
Next, I want to extrude the top two Vertices (or Nodes). So extrude them like so:



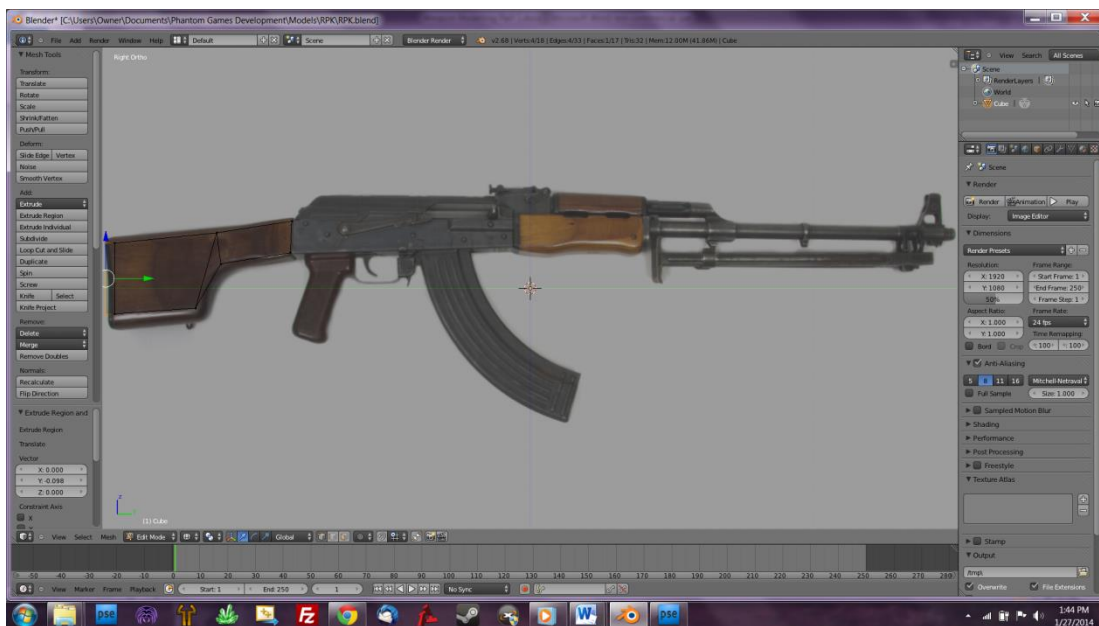
With the two nodes still selected, move it up into a nicer position:



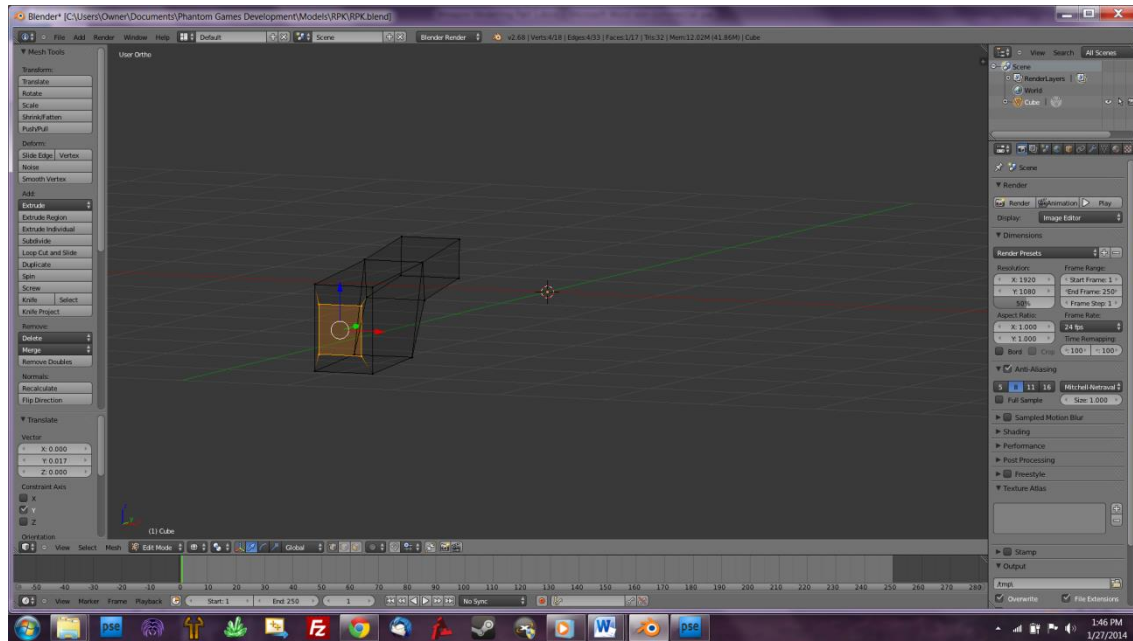
Now, making use of everything I've shown you so far, re-organize the existing vertices to fit the image properly, you should not need to use the extrude tool to accomplish this.



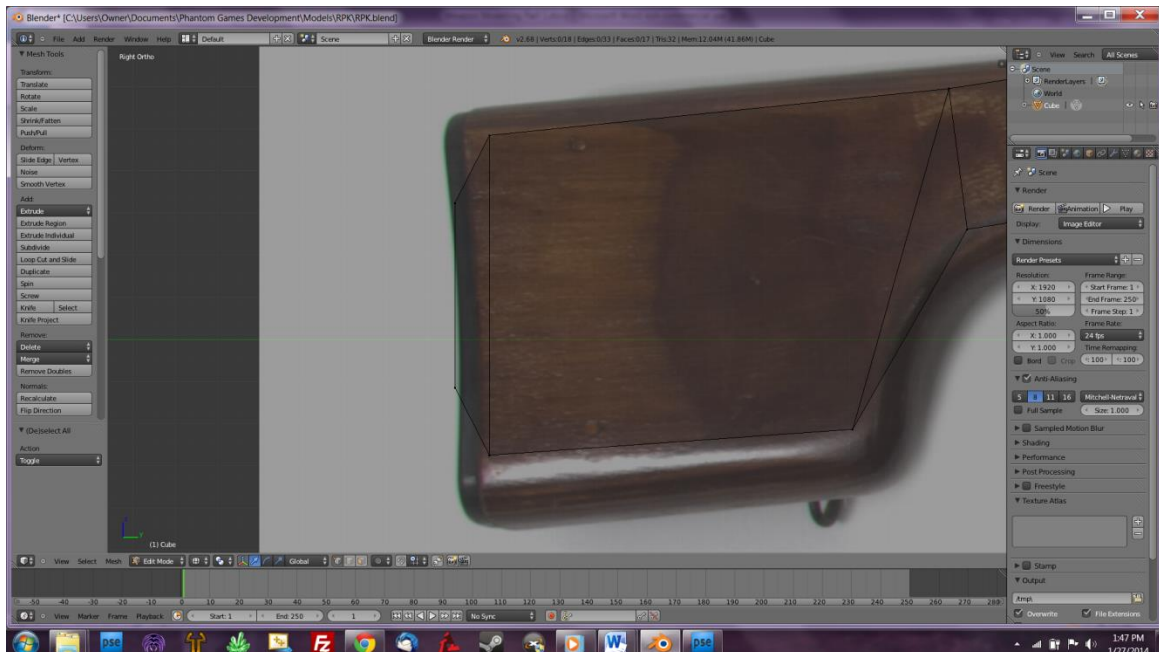
The last thing I'm going to do in this section is help you make the "smooth" edge of the gun. Start with the far left. Create a single extrude and move it just outside the image bounds:



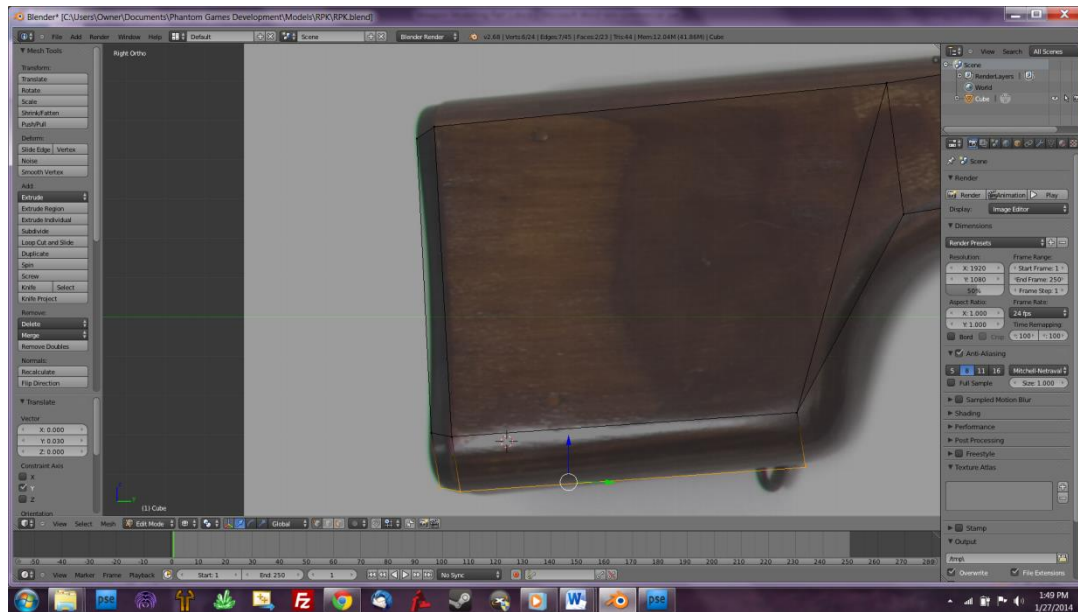
I've noticed that using the custom view angles helps me here a bit, so view the handle from the back and use the scale tool to create a smoother looking back:



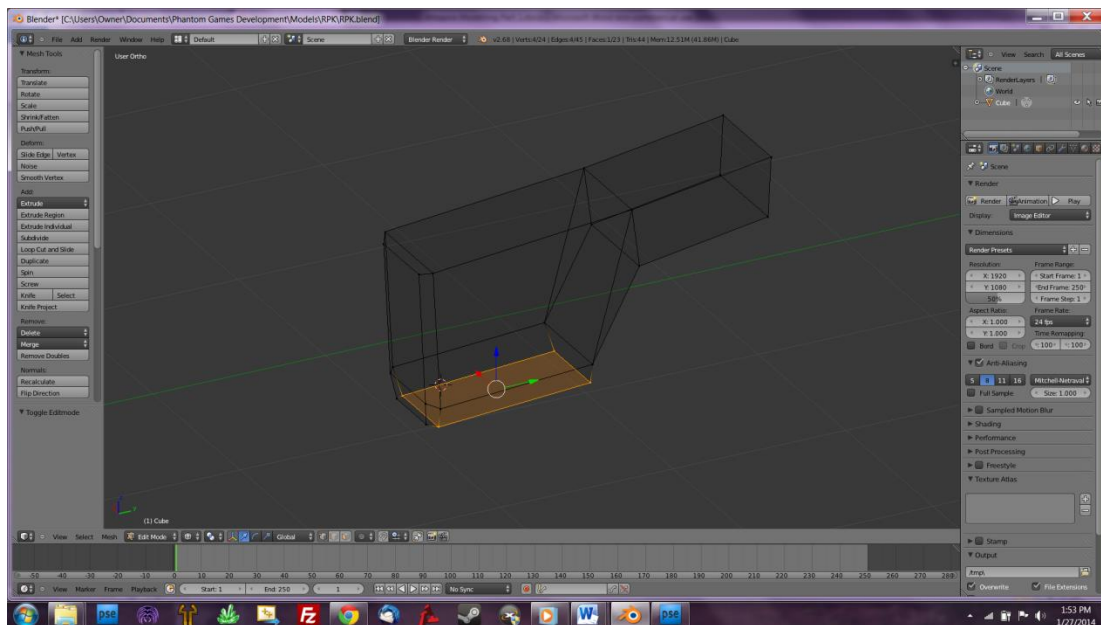
Go back into the side perspective (NUMPAD 3), and zoom way into the “Area of interest” To move around the scene (Panning), you can either hold Shift and the Middle Right Mouse Button or CTRL+2/4/8/6:



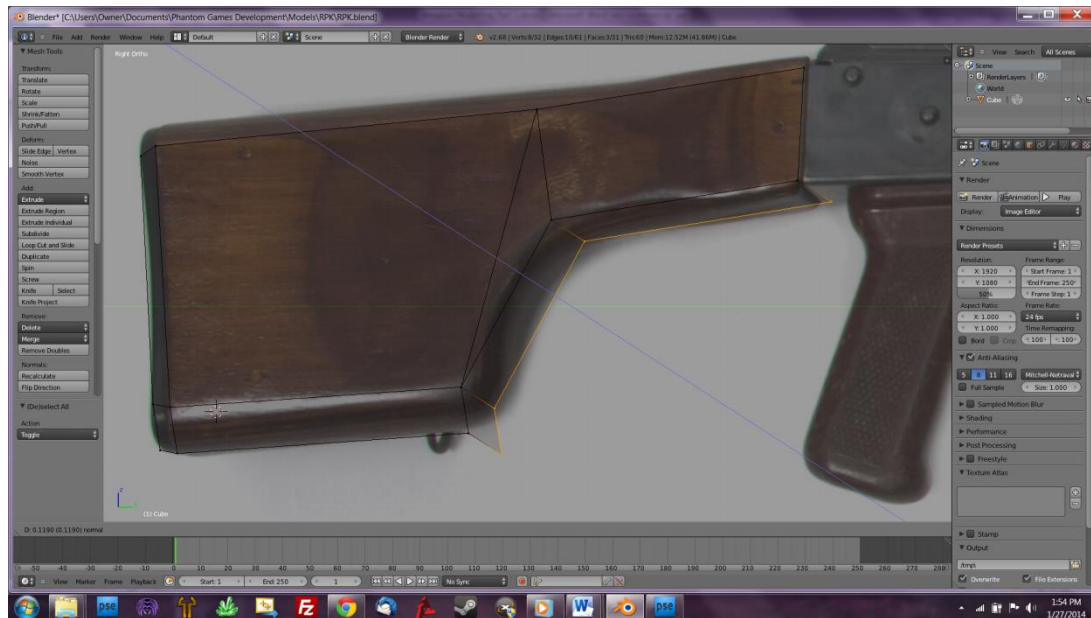
Use the tools I showed you to smooth things about a little bit. You can also extrude the bottom nodes now as well.



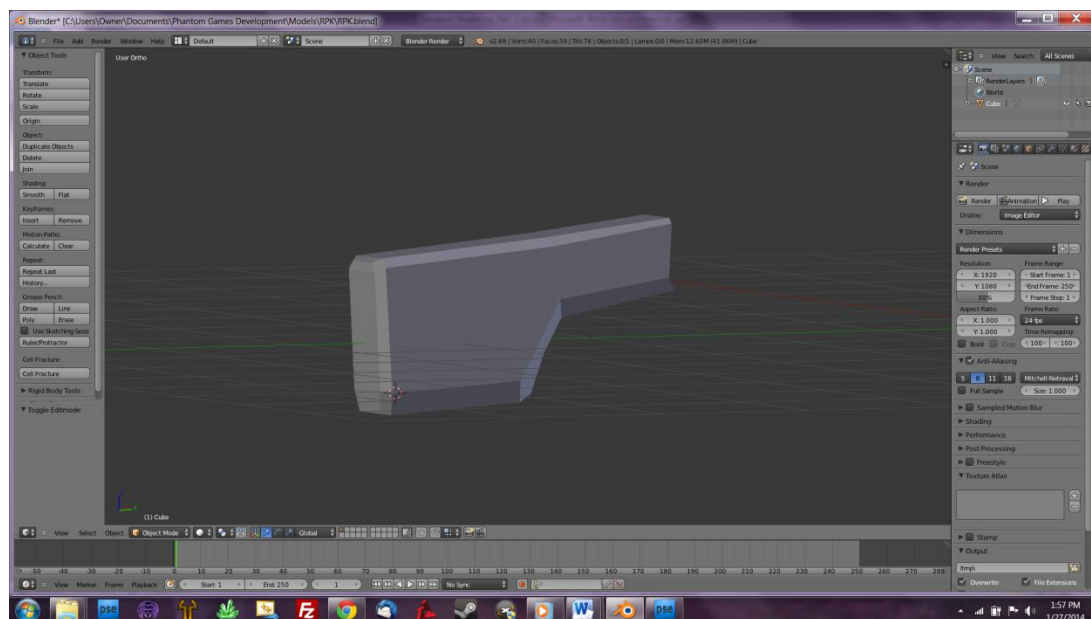
Smooth the bottom:



And repeat again for the top and the side. Simply, extrude, move into perspective, then move and scale.



Once you're all done, you should have something that looks like this:



To get back to this view, press **Z** and then **TAB** to re-enter object mode. Now, we've completed the wooden handle of our RPK. The next tutorial will help you finish up the remainder of the model by introducing a few more tools and tricks to help you get along.

I hope you enjoyed this Welcome to Blender 101 tutorial of mine. ☺