Career Technical Education
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VIDEO GAMES: CHARACTERS & FX'S

Using the modeling skills you learned in Intro to Video Game Design, you'll design a villanous mecha.

Your mecha will have all the structures of a typical bipedal vertebrate: Arms and legs that articulate with joints (knees and elbows - wrists and ankles). It will have a torso & pelvis (the unit that connects the legs and the upper body together: Hands with fingers that bend and a head with a distinctive, menancing quality. Remember, details will make this character interesting!

Your mecha can be constructed using several techniques. Primitives and Extended Primitives are useful.

Tube

Sphere with hemisphere setting and squashed using the scale transform tool.
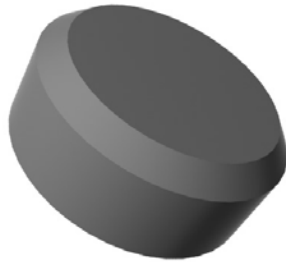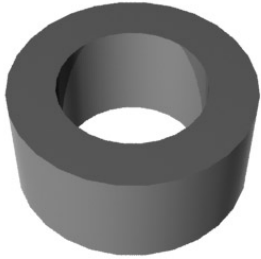
Chamfered Cylinder

Other parts of the Mecha might require more complex modeling such using Booleans, FFD's and/or Box Modeling

A chamfered box with a 3x3x3 FFD applied to round off the surface.

Extuding splines and applying an Edit Poly modifier is another technique for creating unique shapes

1. Rectangle with a radius setting.
2. Extruded using the Extrude modifier.
3. An Edit Poly modifier added to Bevel the top surface.
4. Outer Edges selected, connected and then chamfered to created the rounded sides.

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The Mecha Project

The"Mecha" or "Gundum" project is meant to teach you several things. First, how to make simple primitives and place them in 3D space.

But even more importantly, the parts of the Mecha mimic the parts of the human skeleton and for that matter most vertebrates.

This is called "The Basic Vertebral Structure". You use it in designing and modeling almost all characters that have a backbone.

Everyone's Mecha will look different but they will all display the same basic "Vertebral Structure" and anatomical stance (Plantigrade) and the same proportions (see the chart!).

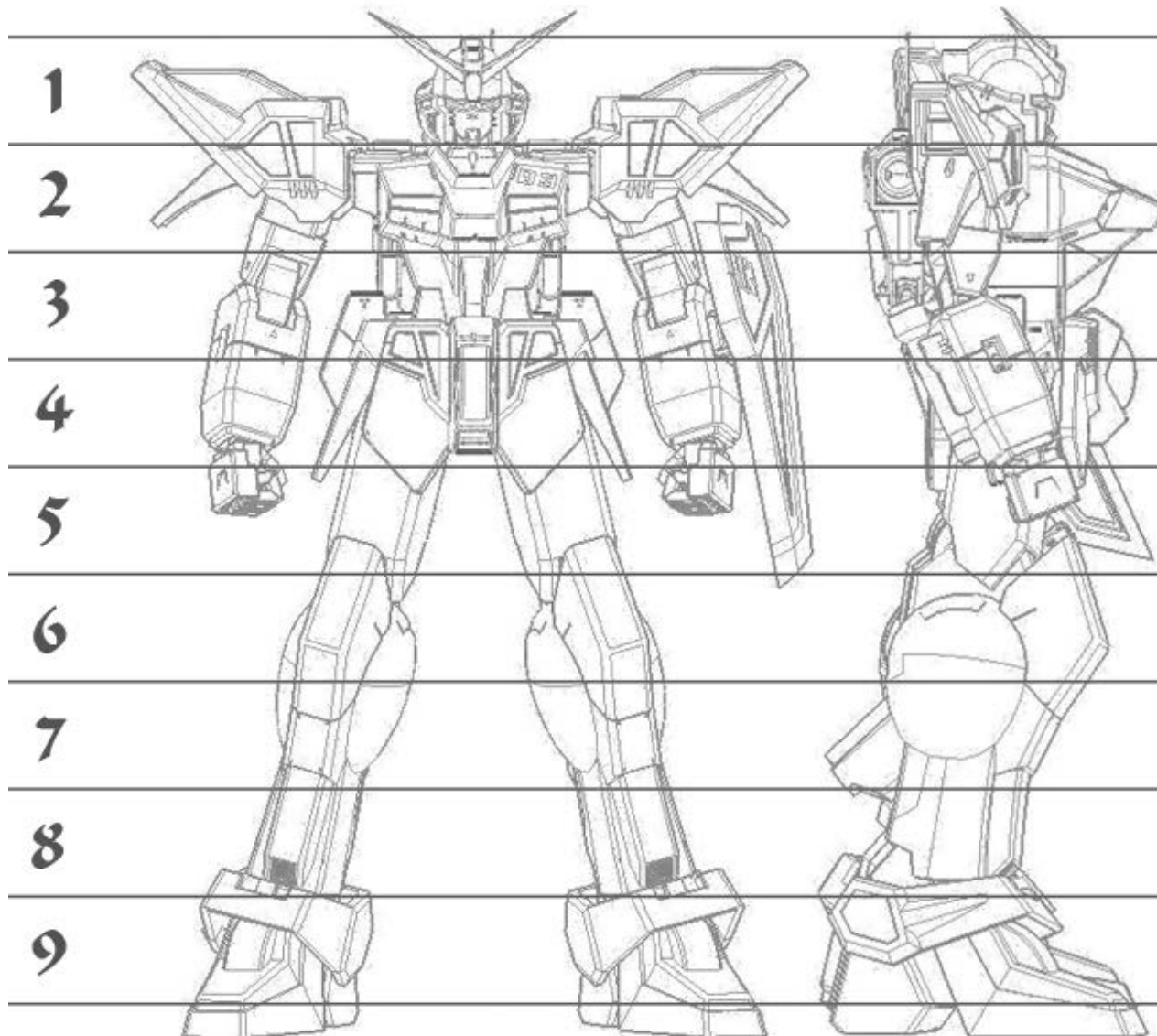**Step 1.** Begin with a simple "Pelvic Module"

Step 2 - Now create a "Thoracic Module".

Step 3 - Connect the Throrax & the Pelvis with a Vertebral column.

Step 4. Continue with making the remaining modules. Use the "Mirror" tool to duplicate the extremities.

18 Basic Parts

Vertebral Column

Thoraacic Module

Pelvic Module

Front View

Back View
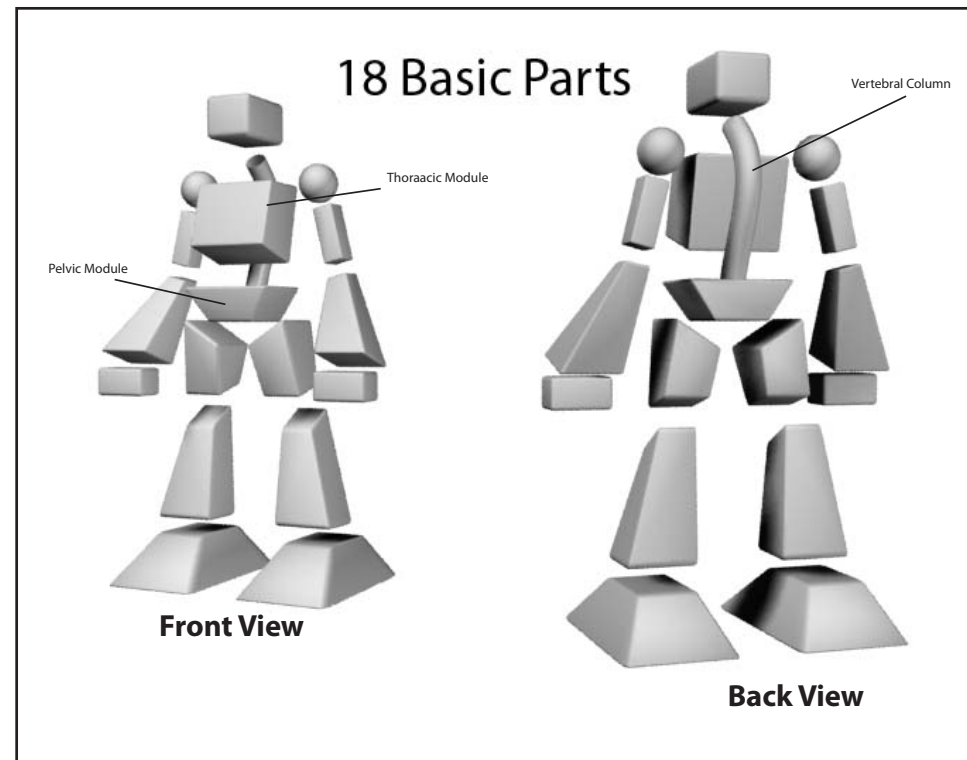
Typical Proportions of Gundam Mecha

The proportions of the Mecha are critical. By proportion we mean the sizes of the different parts to one and another.

For example, if we divide the entire Mecha into 9 equal parts, we see that unlike a human being, the Mecha is very different, proportionally-wise.

The head is much smaller in relation to it's body. The waste is much higher than that of a human. Its' legs and feet are massive.

The entire structure is meant to intimidate. It's as if you are standing close to giant and as you look up perspective makes things look smaller.
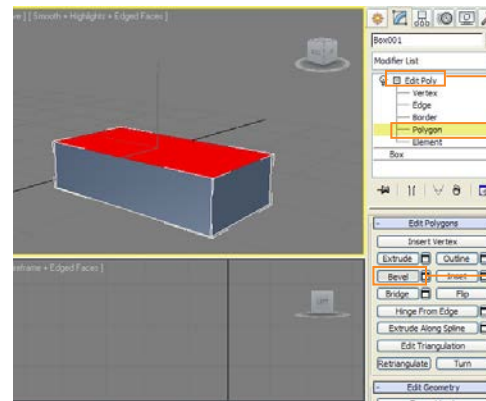
Modeling the Mecha Using Boxes & Box Modeling

You'll begin by making the Foot module.

The Mecha is constructed in modules (upper leg module, lower leg module, chest module, head module, etc.). You will use " Boxes" to create the modules.
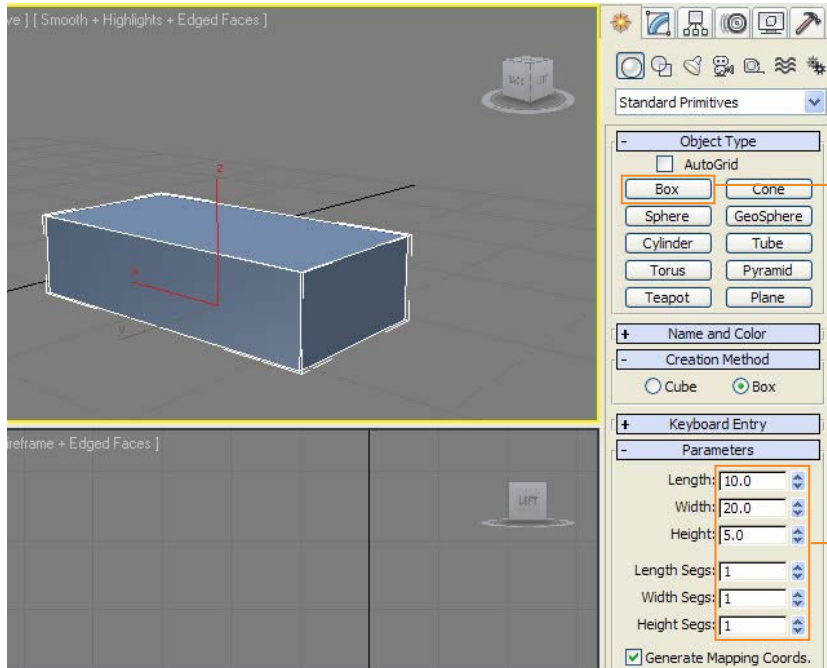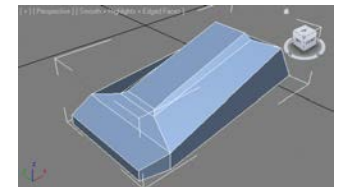

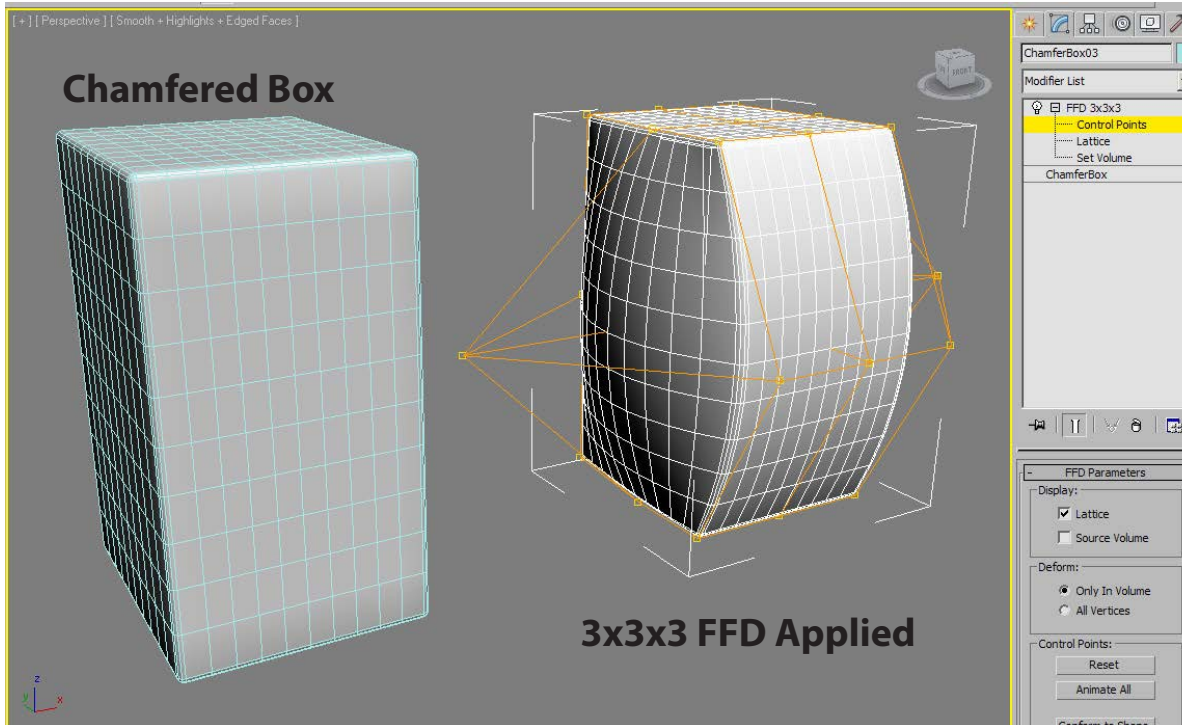**1.** Create a "Box" with the settings shown in the diagram.

2. From the "Modifier List" found on the Modifiy Panel, place an "Edit Poly" on the Box.

3. Open "Edit Poly" and select "Polygon"

4. Use the "Bevel" tool to create new polygons and model the foot module.

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Modular Structure with Curved Surfaces

Chamfered Box

3x3x3 FFD Applied

1. You can curve the surface of a mesh using an FFD modifier.

As always, the lower the number of segments, the "lighter" the model. Lighter models load faster in a game engine.

Text, Logos & Surface Parting Lines Using Bump Maps

Creating the illussion of lines, bumps and other surface qualities
in video game engines is often called "Normal" mapping

1. This logo design was made in Adobe Illustrator and
   imported into PhotoShop.

   In PhotoShop, the color mode was set to RGB.

   Then under "Filters", the NVidia" plugin was
   used to create the image to the right.

2. This image was imported to 3DMax
   and placed in the "Bump" slot in the
   "Material Editor" and applied to the
   box form on the right.

3. The Box was then saved as an FBX
   file and exported to UDK.