Intro to The World of 3D - QUIZ SEPT 9, 2010
Excerpts from Essential Lightwave v9

**Viewports:** The Top, Back and Right viewports in Lightwave are know as “**orthographic**” viewports. They display the 3D world without any perspective distortion. Back viewport = really means towards the front.

**Positioning of Objects in 3D**
Objects in the 3D world are position via **coordinates** along 3 different axes or directions. The **three axes are X, Y, Z.** In lightwave they represent right/left, up/down, and forward/back. Positive numbers are assigned to one directions and negative numbers to the other. 0 is neither positive or negative. The zero point where all three axes meet is known as the **origin.**

**Objects rotation in 3D Space**
Instead of using X, Y, Z - Lightwave uses the terms **Heading(H), Pitch(P), and Bank(B).**

**Heading:** When you turn your head to look to the right or left, this type of adjustment is known as Heading in Lightwave

**Pitch:** When you move your head to look up or down, this this type of adjustment is known as Pitch in Lightwave

**Bank:** When you cock your head left to right, his this type of adjustment is known as Bank in Lightwave

An objects rotation in not based on the origin. Instead it's based on the virtual point known as the “**Pivot Point.**” Each object in Lightwave has its own pivot point. **Rotation around the pivot point are described in terms of degrees** and just like X, Y, Z positions, they can be either positive or negative.

Lightwave can use the American system of measuring, but using the metric based system is much easier to use when you are multiplying and dividing.

**3D is a simulation** - everything you do in the 3D world is a simulation. The tools provide digital artists a way to simulate various real-world properties. An example: If a light isn’t bright enough and its already at 100% luminosity, bump it up to 200%. If there is too much light in a scene, set the light intensity to a negative number. There is no such thing as negative light in reality.

**Understanding the 3D Pipeline**
- **Modeling** - simulating form, models are composed of points, that are connected together to form polygons. These polygons are what Lightwave’s virtual camera sees when it draws or “renders” the final image.
- **Lighting** - Once the object has been built it is place on a stage called Layout. Lighting is the most important in achieving a good-looking final product. Lighting Establishes location, time of day and mood through the use of color and shadow.
- **Surfacing** - Once your object are hit you can begin to give them the identify unique physical properties. Surfacing also involves the painting of “texture maps” which are applied to models like decals.
- **Animating** - The process of creating the illusion of life or lifelike qualities to various components in your 3D world.
- **Rendering** - A computer programs evaluation of objects, lighting, simulated surfaces properties, and changes over time are draw as a visual image. Output settings need to be adjusted to balance computation time with image quality.