Astronomical Catalog Example with Blender

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Described here are steps to load an ASCII text file and create a 3D map for a catalog of galaxies. Data are downloaded from http://edd.ifa.hawaii.edu/
Tully, R. B., Rizzi, L., Shaya, E. J., et al. 2009, AJ, 138, 323

An example blend file created with these steps as well as data can be found at:
http://www.cv.nrao.edu/~bkent/computing/kentPASP.html

Generating a template object

1. Start Blender (Double click the icon or type ./blender from the command line).
2. Right click to select the default Cube object and press **'X'** to delete it.
3. SHIFT-A and select *Mesh->Plane*.
4. TAB key to switch the GUI to **"Edit Mode".**
5. Hold the Shift Key and Select three of the vertices on the plane. Press the **'X'** key to delete them. This vertex will be our template catalog object.
6. TAB key to switch the GUI back to "**Object Mode".**

Texturing the template object

1. Choose the Material Icon.
2. Click the **"+"** icon to start a new material.
3. Choose **"Halo".**
4. Change the size to "0.020".
5. Choose the Texture Icon.
6. Change the Type to **"Blend"**.
7. At the bottom of the dialog choose a color (Blue works well in this case).

Loading the catalog

1. Open the Text editor to start/edit a Python script (one is provided in the blend file).
2. "***import bpy***" always needs to be at the top of the Python script.
3. There are multiple ways to read in ASCII files - we use a simple Python list comprehension in the example blend file.
4. Duplicate the template object (selected by default) with the method:
   bpy.ops.object.duplicate()
5. Move the object to the appropriate position with the method:
   bpy.context.active_object.location.xyz=(float(x[i]),float(y[i]),float(z[i]))
   where x, y, and z are Python lists. Each argument passed in the Python tuple needs to be a

float data type.

Keyframing the camera

1. The Camera can be selected in the **Outliner** (upper right section of the GUI).
2. Keyframe the camera location with the **"I"** key and choose **"LotRotScale".**
3. Reposition the Camera to a new location with the **"G"** and **"R"** keys for *"Grab to Move*" and *"Rotate".*
4. Keyframe the new camera location with the **"I"** key and choose **"LotRotScale".**

Animating and Rendering the Sequence

1. To see a preview of the animation, Choose *View->Camera* (last option) and then click the Play button at the bottom of the GUI. Press the square **Stop** button to halt the animation.
2. Choose the Render tab.
3. At the bottom of the Render dialog, Change the output to "*AVI JPEG*". The **"Stamp"** option is useful as it prints metadata about the animation over the video. Scroll back to the top of the dialog and Click **Animate**. A video file will be generated.