KNIFE PROJECTION

Introduction
We’ve already looked at the Knife tool in handout 014_TheKnifeTool.pdf. However that only makes straight cuts across a mesh. Knife projection uses a complex 2D shape to cut a 3D mesh.

Exercise
Here we have the default teapot in Blender (to access this as a primitive enable the Mesh Extras add-on in Preferences). Add a degree 2 Catmull-Clark subdivision modifier and apply the modifier in Object mode to collapse it into an editable mesh with around 12k verts as below. Go to a side view in Object mode and add a shape - maybe a letter. It has to be 2D, though not necessarily aligned with the side view. In the image below I’ve added the word **Tea** using the Text tool. Note that it is still editable; in other words the text has not been converted to a mesh. It can still be curves.
Next, make sure that both objects are in Object Mode (it's possible to have several objects in different modes on the screen) then select the text first and Shift-select the teapot. The text should be orange and the teapot yellow - that is, it should be the Active object. Now go into Edit mode. The teapot, being the last selected, will still be selected.

Choose Knife Project in the Tools panel of the left fly-in.

The faces nearest the camera are cut by the text (though they are still part of the teapot). Note that even if the text is completely outside the cut object only the nearest faces will be cut. To cut the other side the operation will need to be repeated from the other view, when the text will need to be rotated if not to be a mirror.
Here is the result with the selected faces extruded inwards.

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