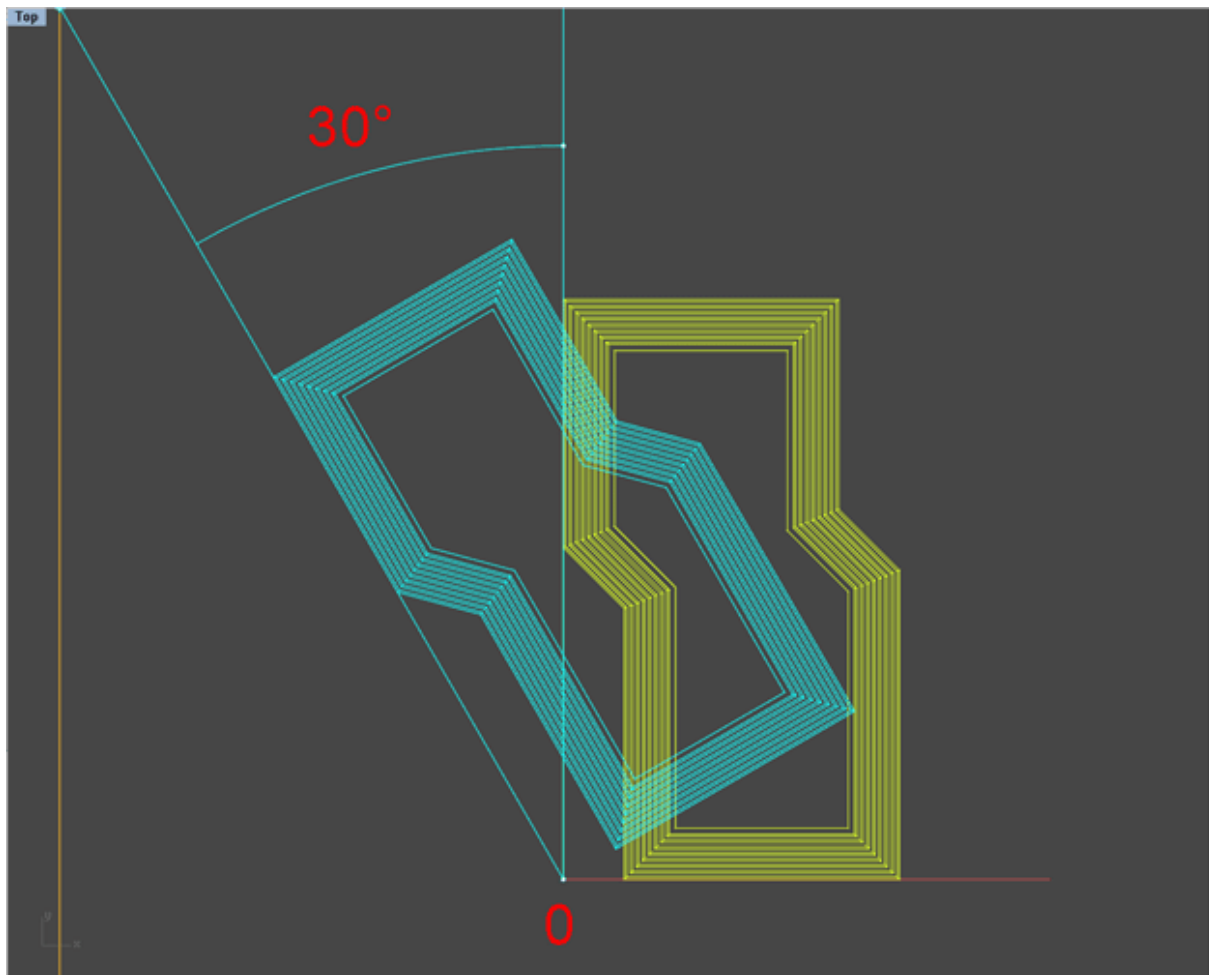


Creating an Axonometric View in Rhino

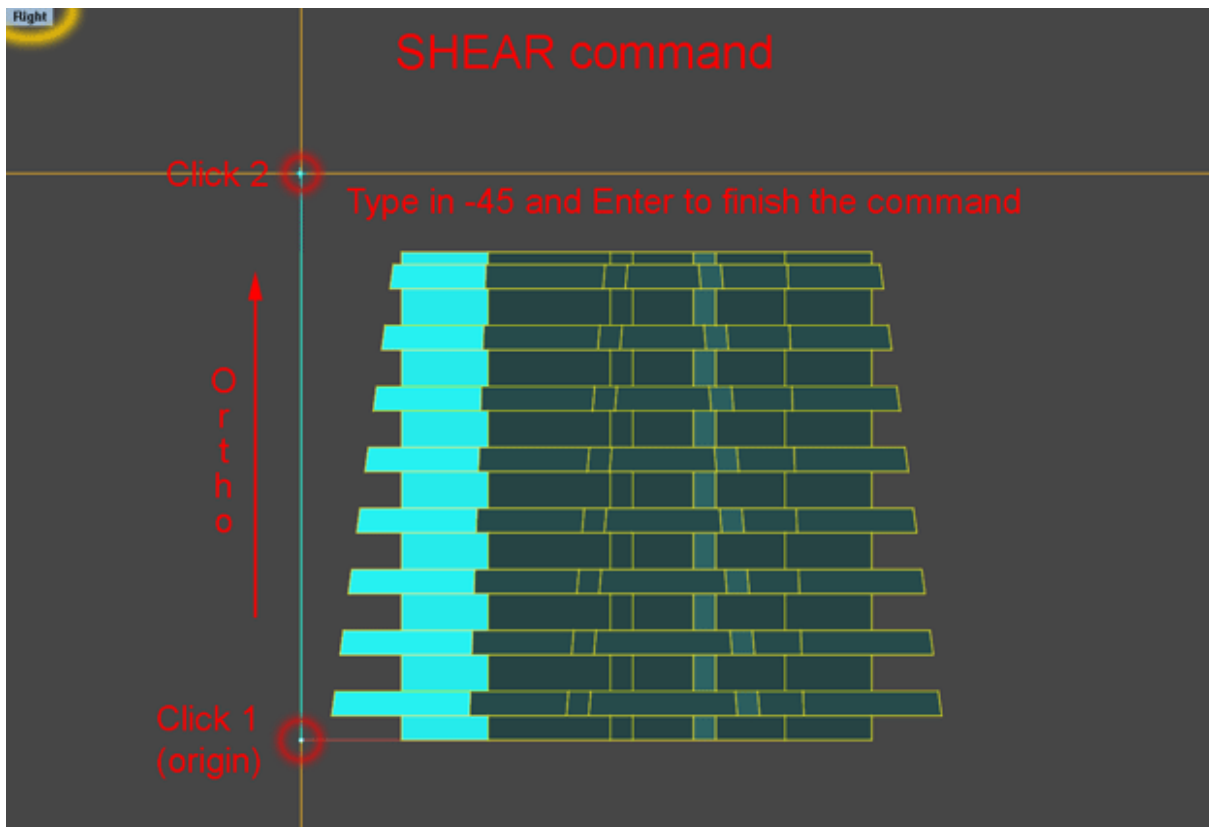
There is no way to create a real-time 3D axonometric view that's geometrically correct in Rhino, as axonometric isn't really a true 3D display mode, but rather an artificial (pseudo-3D) construction.

However, it is possible to create a geometrically accurate axonometric plan view in the top viewport, which can then be used with Make2D to create exportable line geometry for 2D plans. The 2D geometry will have true measurements on all axes. The procedure is quite simple:

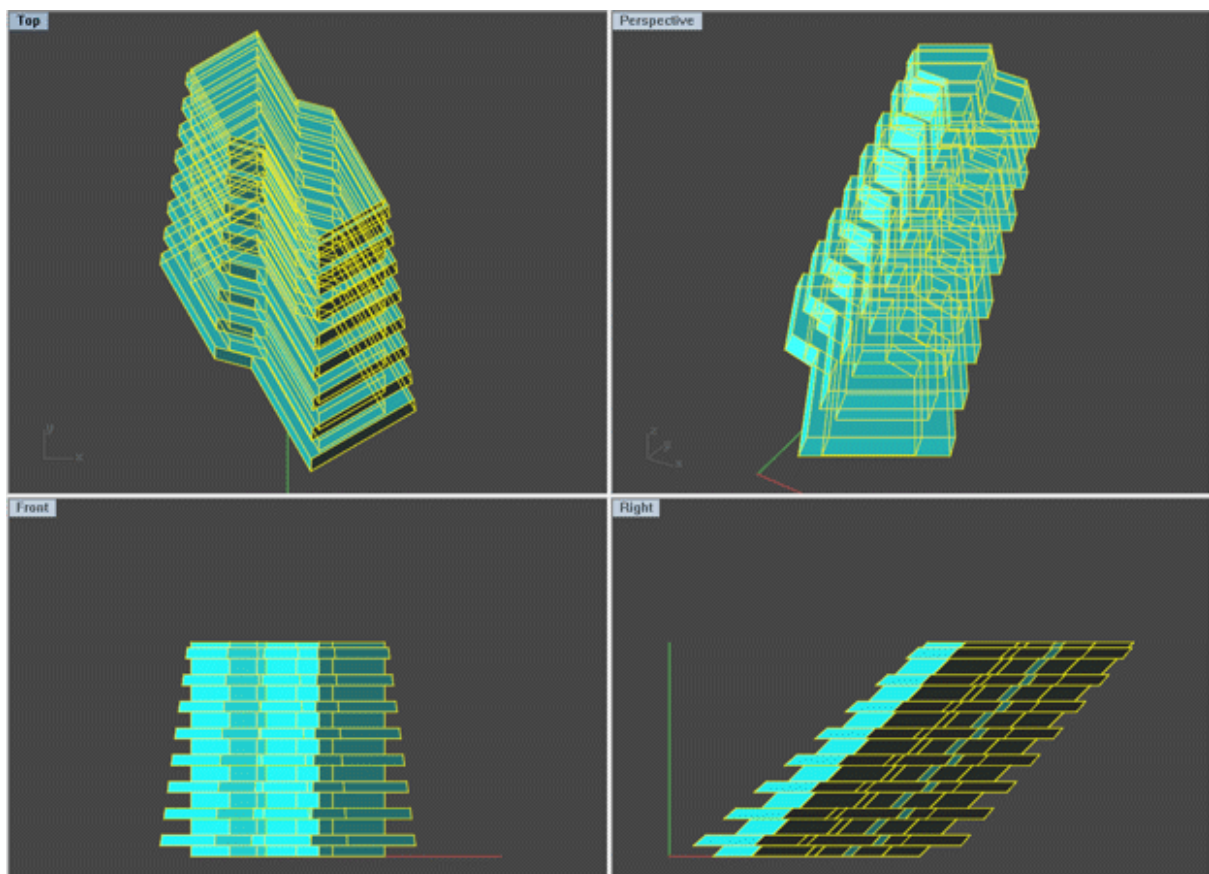
- 1) Using Export Selected... export all the objects you want to use to a new Rhino file
- 2) Open the file in a new Rhino window. Make sure you're in 4-view mode and use Zoom All Extents to see the entire model in all viewports.
- 3) In the Top viewport, Select all (Ctrl+A) and use Rotate to rotate the entire model to the Axo angle desired (often this will be 30°). If the model is near the origin (recommended), use the 0 for the point of rotation.



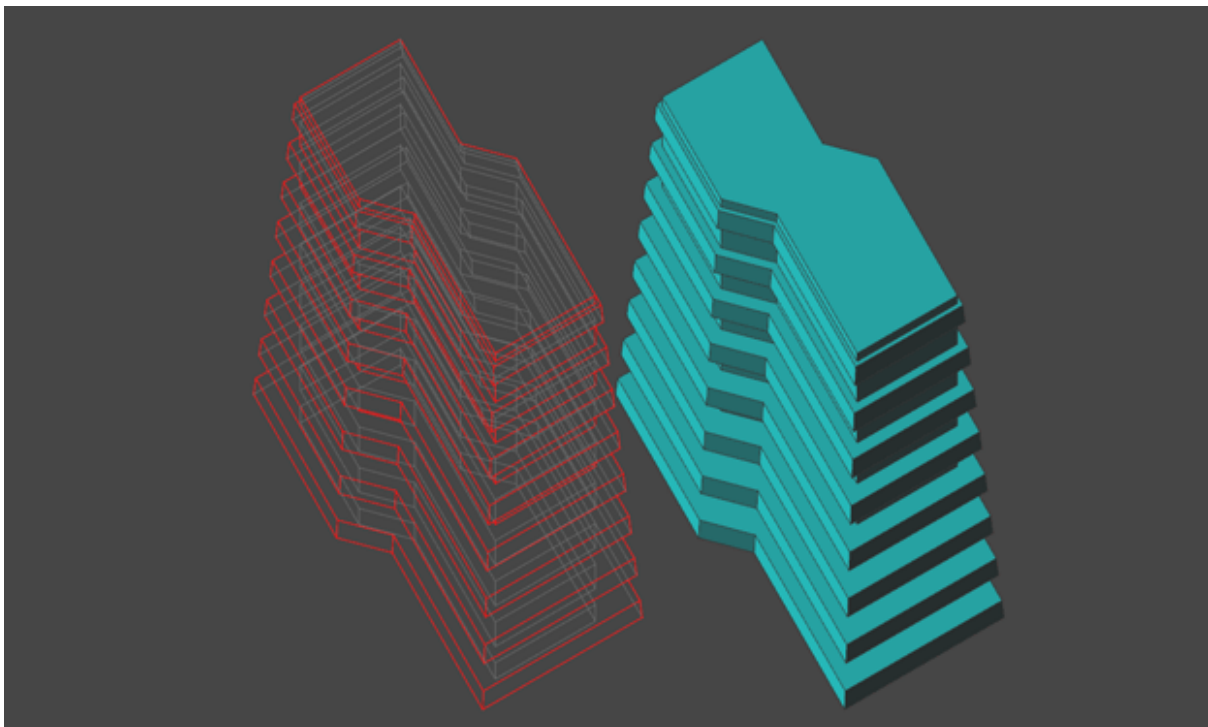
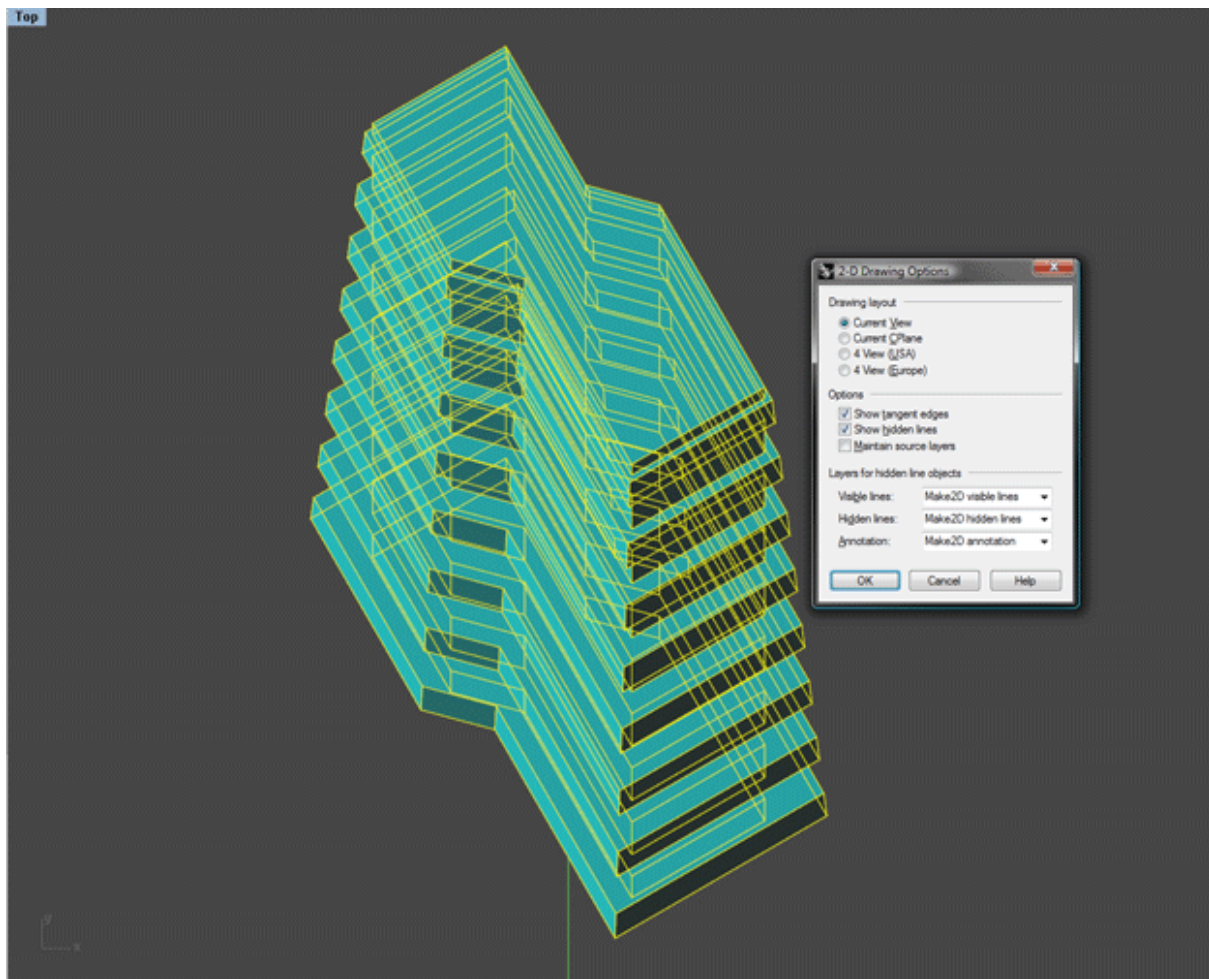
- 4) While the model is still selected, go to the Transform menu and select the command Shear.
- 5) To establish the baseline for shear, you need to indicate two points in the **Right** viewport. You want the baseline to be vertical, so these two points need to be vertical to each other. The easiest way to do this is select the origin (0) for the first and with Ortho on, select any point above it as the second. Alternatively, the first point can be the lower left corner of the model (seen in the right viewport) and a second point above that (again, Ortho for vertical).



6) At the prompt for Shear Angle, type -45, and Enter. The model will shear over 45° to the right. In the Top viewport, you should now see your model in pseudo-axonometric. From the Top, all measurements will be geometrically correct (1:1). Note that measuring the model, all vertical measurements are now going to be 1.41 times larger than they should be, due to the stretch applied with Shear.



8) Use Make2D in the Top viewport to create your 2D line geometry.



9) You can also use screen captures from the Top viewport in any of the display modes (shaded, ghosted, rendered, etc.) to create images to export. The commands `_ViewCaptureToFile` and `_ViewCaptureToClipboard` will help you here. Executing the dash version of the commands (`-_ViewCaptureToFile`) will allow you to change the resolution of the image as well as some other options. Another handy trick is to simply left click in the viewport (not on any geometry) and use `Ctrl+C`. If no geometry is selected when this is done, the view is copied to the clipboard as an image. You can paste this into your favorite image editing program (limited to viewport resolution only).

Notes:

Shear is a relatively simple transformation that usually doesn't need a lot of memory or calculation time. However, if your model is VERY complex and your machine is weak, it may take some time. Make2D on the other hand is very processor intensive and uses a lot of memory. If your model is complex, your machine is slow and/or you do not have a lot of memory, it is not likely to succeed - it will take a very long time or crash Rhino. Bad objects or many objects with concurrent edges will also cause Make2D to take much longer to execute.

You can automate the above procedure for creating Axo views by using macros. Two quick ones are listed below for your use. For more info on how to use macros see the Rhino Wiki:

<http://en.wiki.mcneel.com/default.aspx/McNeel/ScriptsPage.html>

<http://en.wiki.mcneel.com/default.aspx/McNeel/MacroScriptSetup.html>

Following is a macro to create a 30° Axo view in an existing file. It will ask you to select the geometry, then apply the transformation automatically, using the world origin as reference.

(For Rhino running in English)

```
! _Select _Pause
_SetActiveViewport Top
_Rotate 0 30
_SetActiveViewport Right
_Shear w0 w0,0,1 -45
_SetActiveViewport Top
_Zoom _All _Extents
```

(Pour Rhino en français)

```
! _Select _Pause
_SetActiveViewport Dessus
_Rotate 0 30
_SetActiveViewport Droite
_Shear w0 w0,0,1 -45
_SetActiveViewport Dessus
_Zoom _All _Extents
```

The following macro does the same as the first, but it will also export all of the transformed geometry to a new file, and then undo the transform. This way the original geometry is preserved, and the transformed geometry is in a new file. You will be asked for a file name and location during the process. You will need to open the new file with your Axo separately. Always save your original file first.

(English)

```
! _Select _Pause
_SetActiveViewport Top
_Rotate 0 30
_SetActiveViewport Right
_Shear w0 w0,0,1 -45
_SetActiveViewport Top
_Export _Pause _UndoMultiple 2
```

(français)

```
! _Select _Pause
_SetActiveViewport Dessus
_Rotate 0 30
_SetActiveViewport Droite
_Shear w0 w0,0,1 -45
_SetActiveViewport Dessus
_Export _Pause _UndoMultiple 2
```

msh/03.09