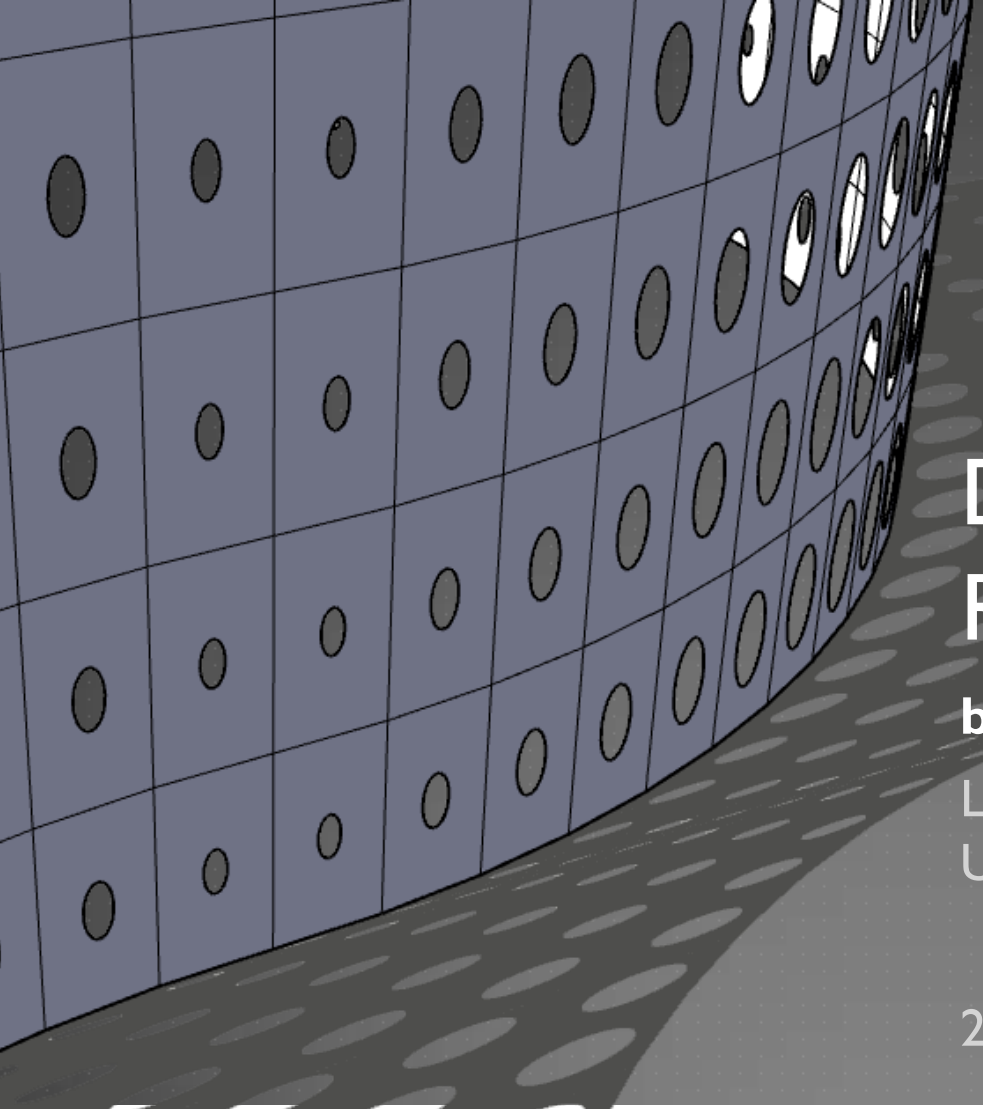

DESIGNING WITH RUBY

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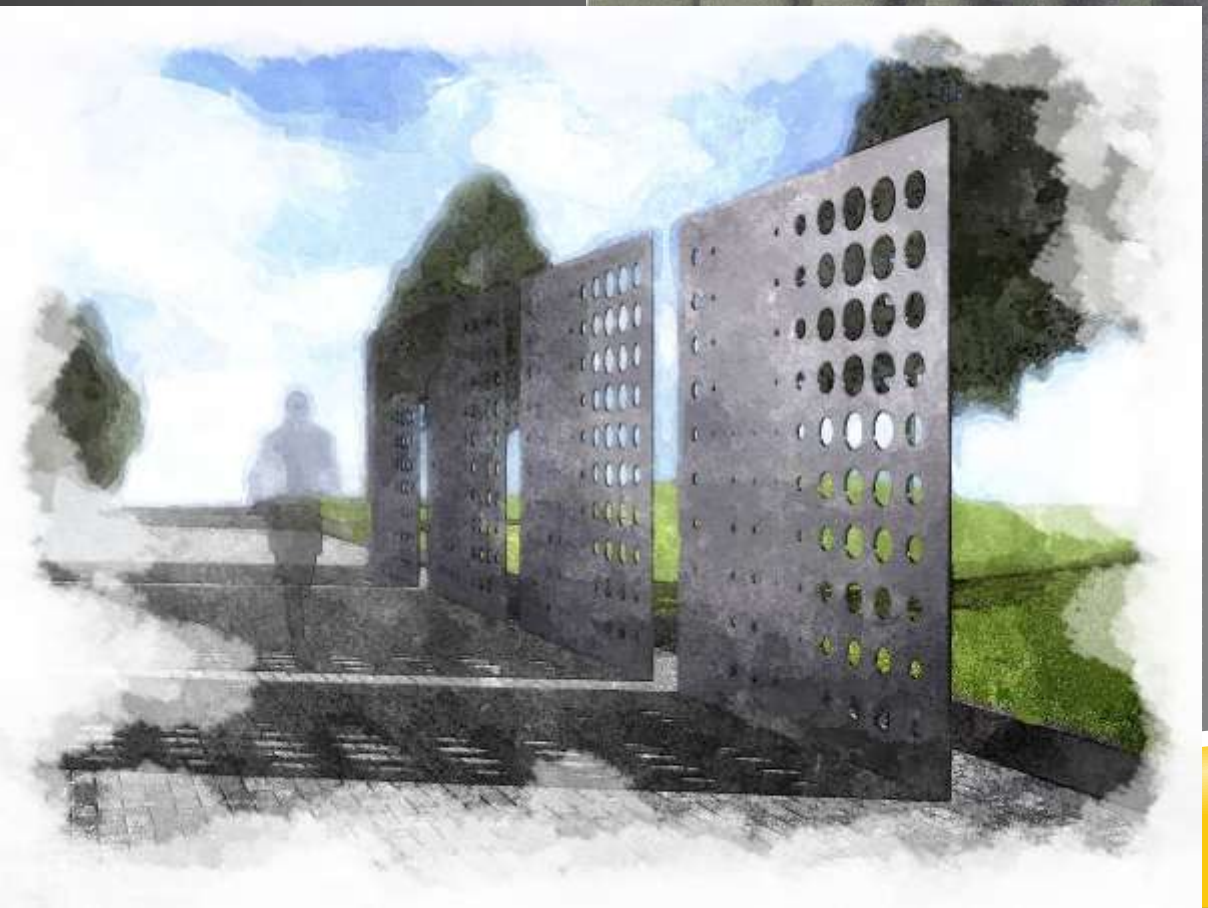
2012 SketchUp Basecamp, Boulder, CO

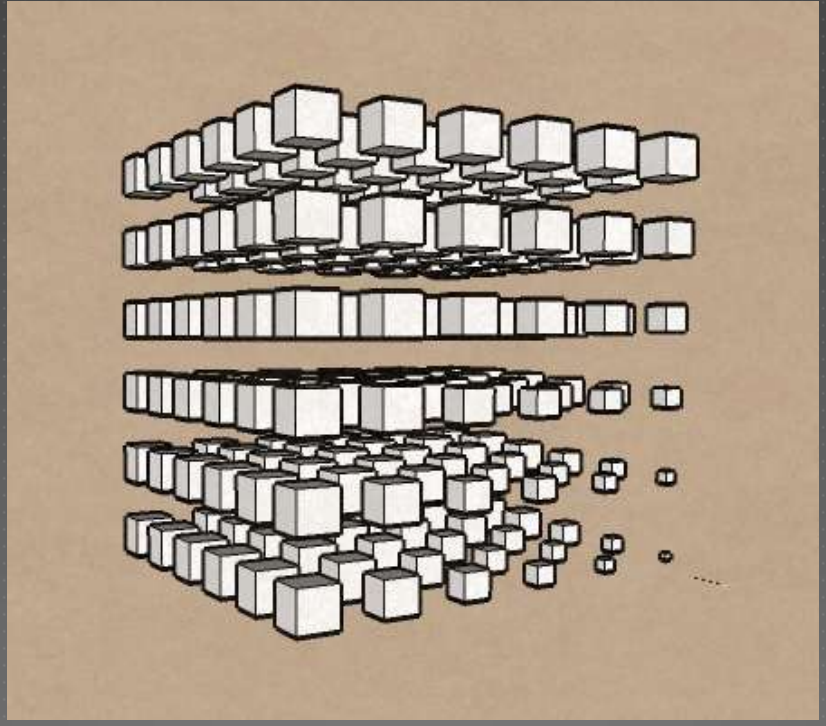
WHAT WE'RE GOING TO DO…

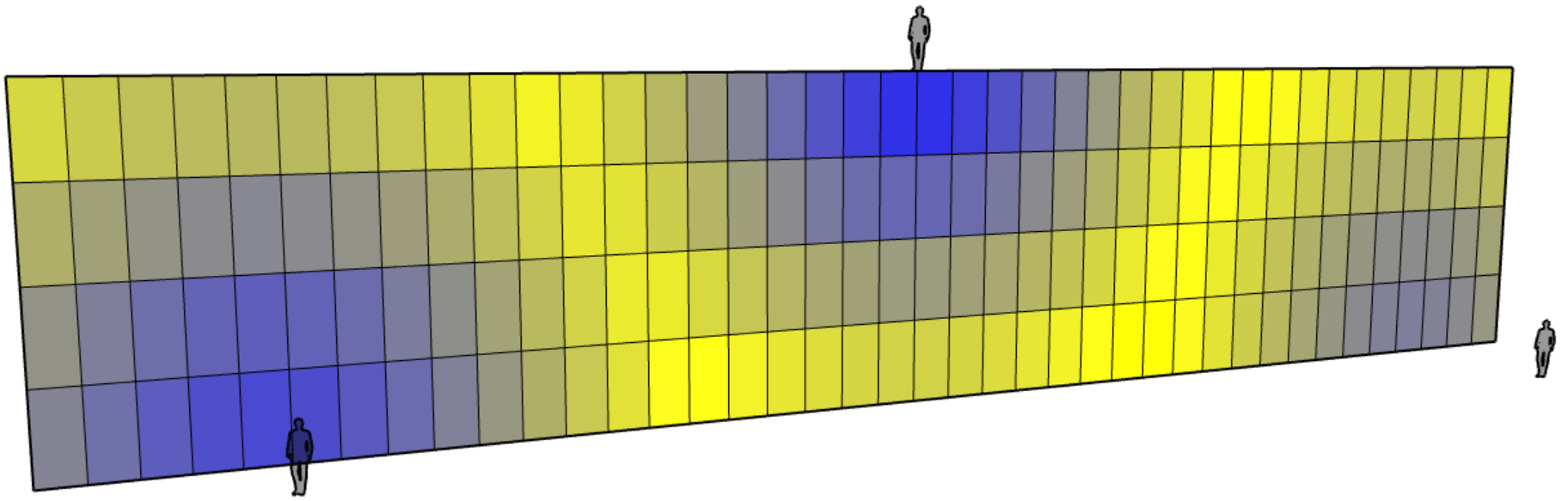
- How can we use Ruby for Design?
- Editing code in SketchUp
- What can Ruby do for us?
- A simple example: colorful boxes
- Use some math to design a panel
- Responsive designs, dynamic components
- Want to learn more?

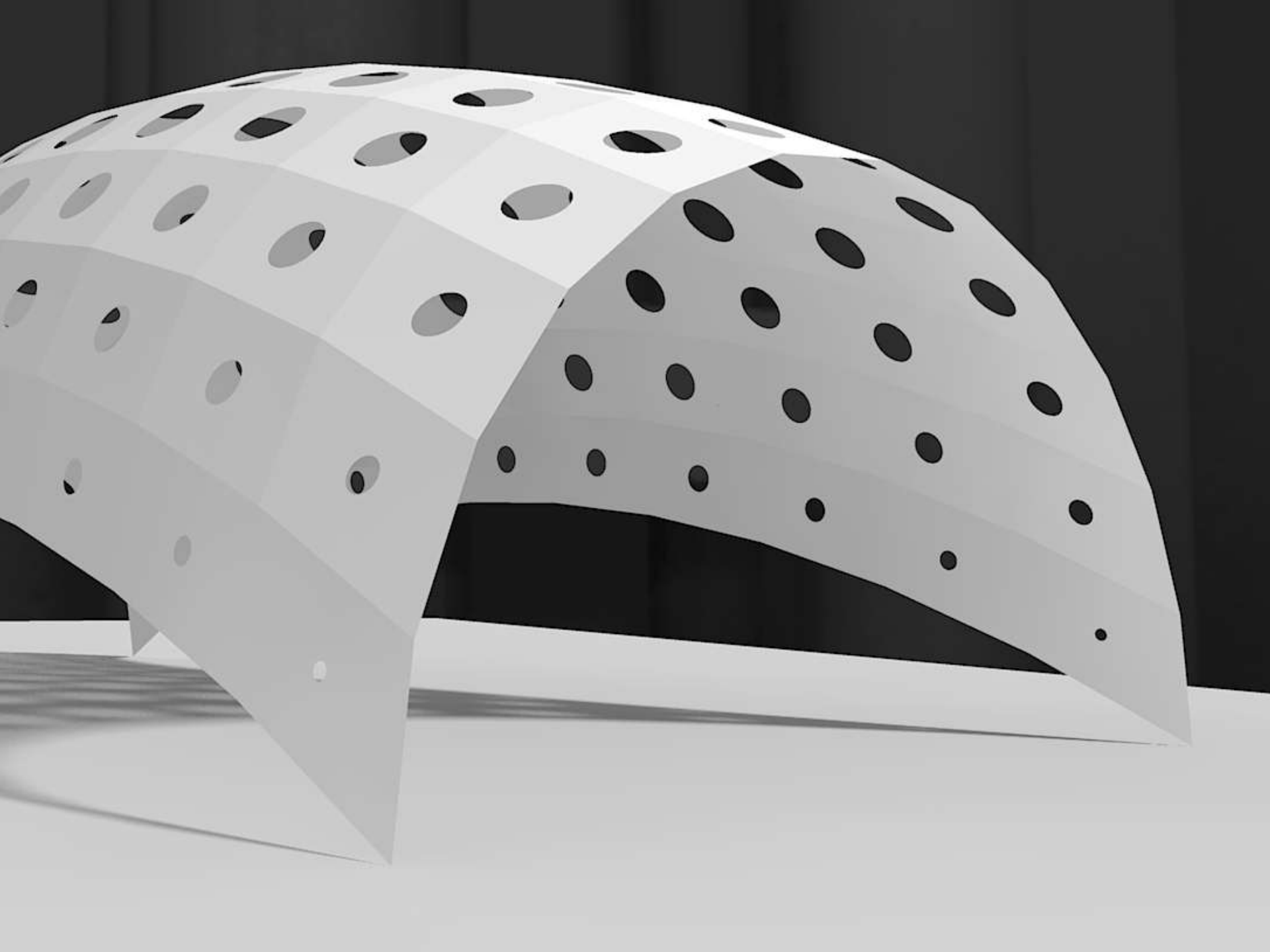
IMPORTANT: I use "pragmatic programming" to keep things simple

HOW CAN WE USE RUBY FOR DESIGN?

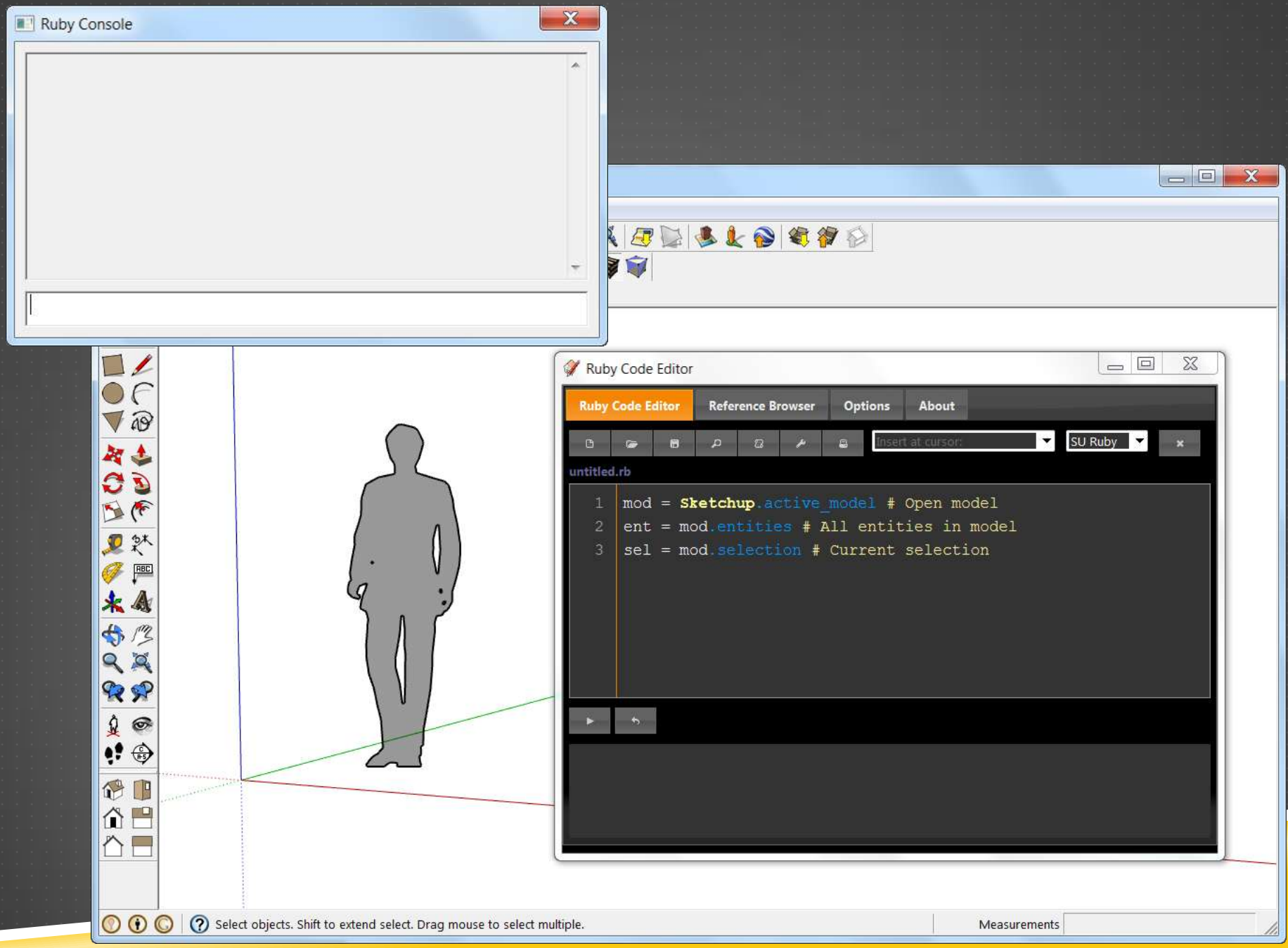




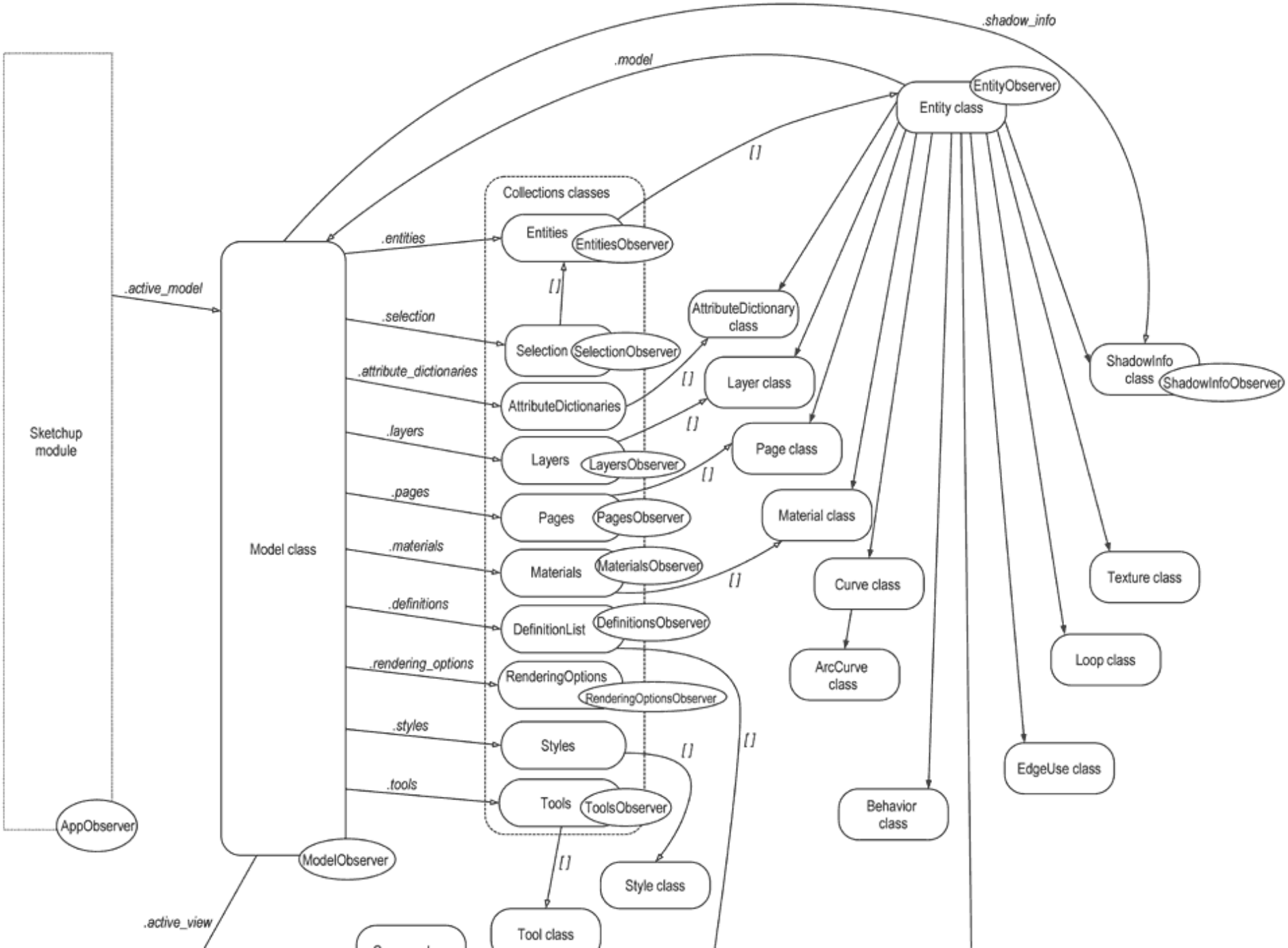




EDITING CODE IN SKETCHUP


Ruby Console
Ruby Code Editor
Ruby Code Editor
Reference Browser
Options
About
Insert at cursor:
SU Ruby
untitled.rb
1 mod = Sketchup.active_model # Open model
2 ent = mod.entities # All entities in model
3 sel = mod.selection # Current selection
Select objects. Shift to extend select. Drag mouse to select multiple.
Measurements

WHAT CAN RUBY DO FOR US?


.shadow_info
.model
EntityObserver
Entity class
[]
Collections classes
.entities
Entities
EntitiesObserver
.active_model
Sketchup module
.selection
Selection
SelectionObserver
AttributeDictionary class
.attribute_dictionaries
AttributeDictionaries
[]
Layer class
ShadowInfo class
ShadowInfoObserver
.layers
Layers
LayersObserver
[]
Page class
.pages
Pages
PagesObserver
Material class
Model class
.materials
Materials
MaterialsObserver
[]
Curve class
Texture class
.definitions
DefinitionList
DefinitionsObserver
ArcCurve class
Loop class
.rendering_options
RenderingOptions
RenderingOptionsObserver
.styles
Styles
[]
EdgeUse class
.tools
Tools
ToolsObserver
Behavior class
AppObserver
ModelObserver
[]
Style class
.active_view
Tool class

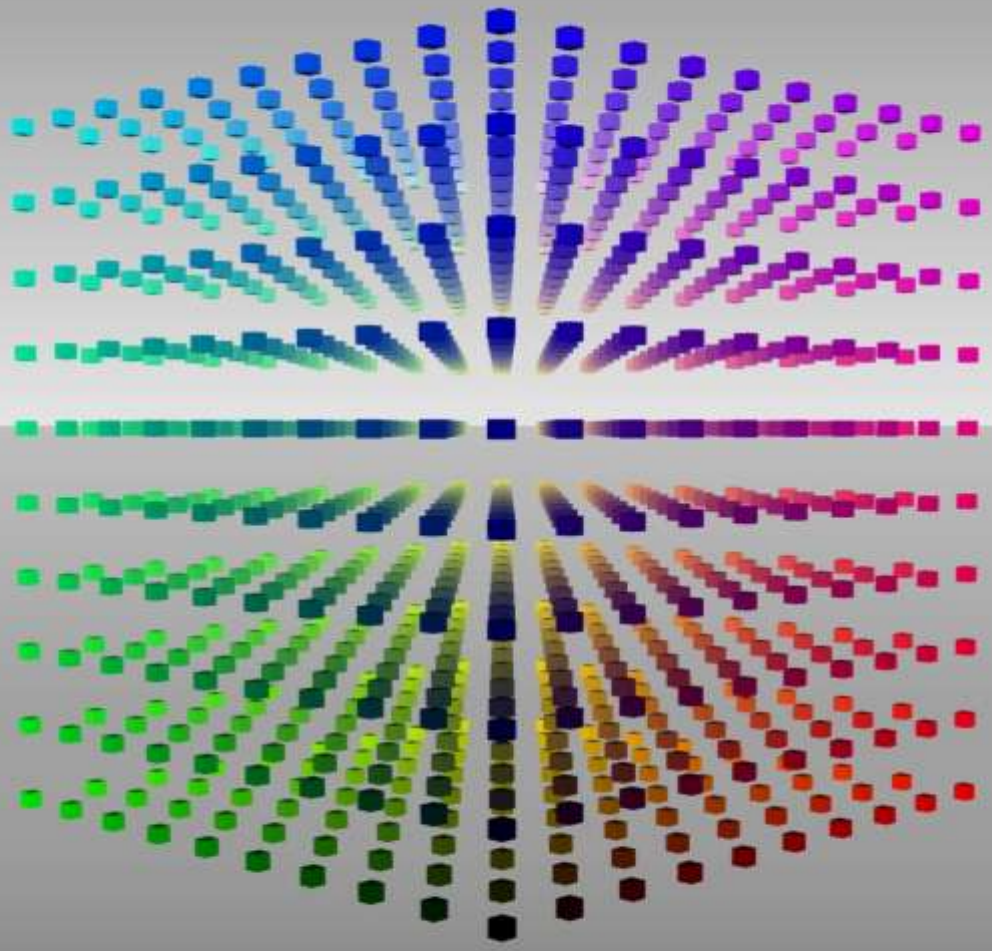
RELEVANT FUNCTIONALITY

- Creating objects
  - `Sketchup.active_model.entities`
  - Lines, circles, polygons, meshes, components, construction points
- Manipulating objects
- Importing data
- Connect to the web with a WebDialog

Entities (Parent: Object)

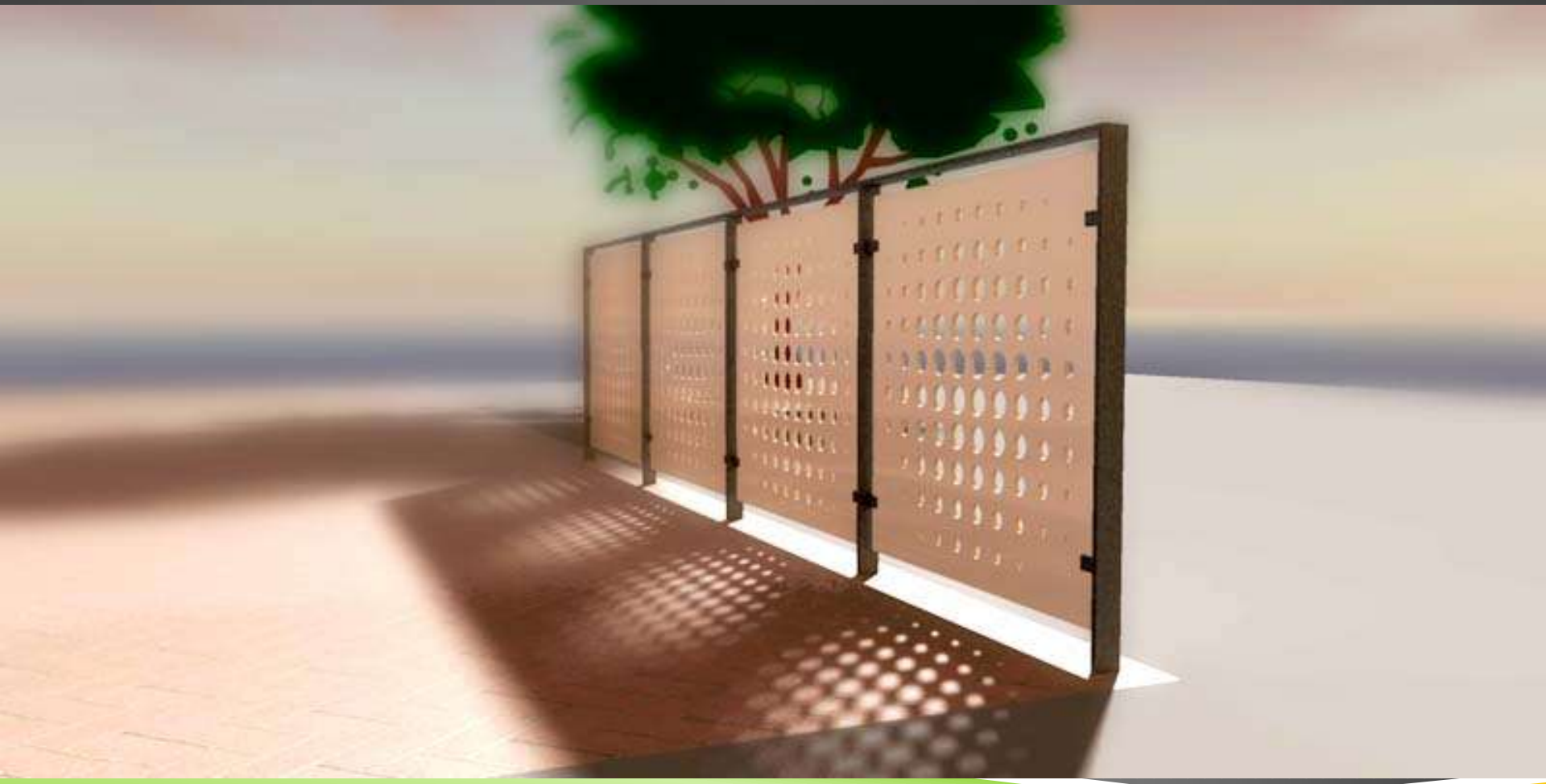
```
.[] .add_3d_text .add_arc
.add_circle
.add_cline .add_cpoint .add_curve
.add_edges .add_face
.add_faces_from_mesh .add_group
.add_image .add_instance .add_line
.add_ngon .add_observer .add_text
.at .clear! .count .each
.erase_entities
.fill_from_mesh .intersect_with
.length
.model .parent .remove_observer
.transform_by_vectors
.transform_entities
```

EXAMPLE: MAKE COLORFUL BOXES



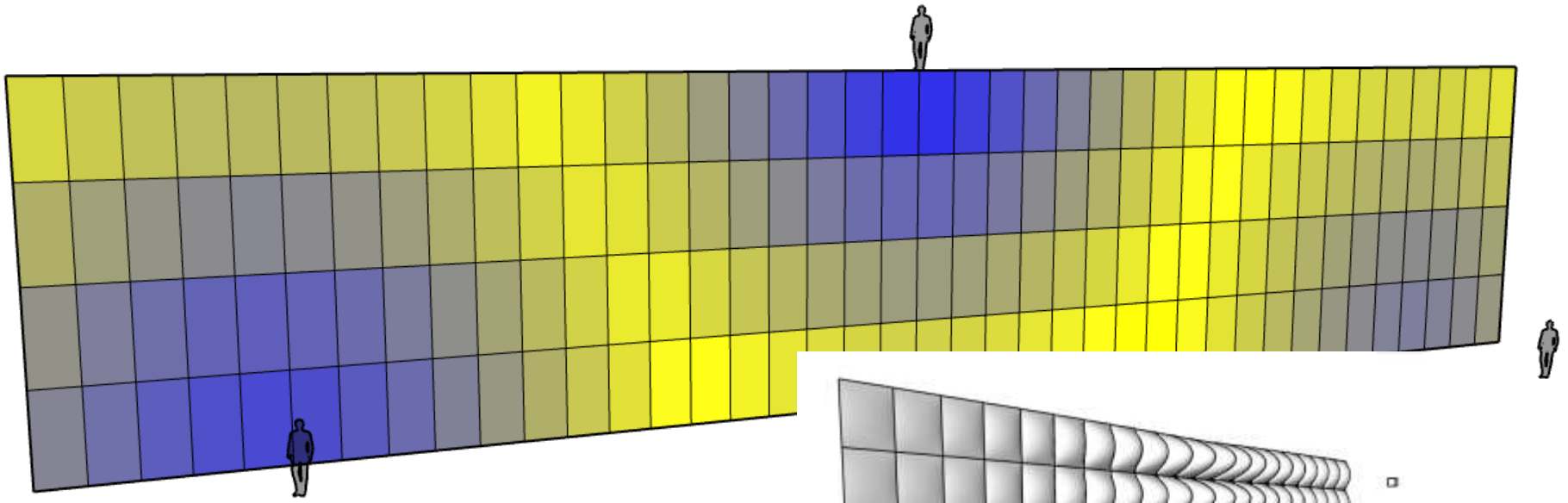
```
ent = Sketchup.active_model.entities

n = 5    # number of boxes
s = 100  # spacing
w = 50   # box width

(0..n-1).each { |i|
  (0..n-1).each { |j|
    (0..n-1).each { |k|

      face = ent.add_face
             [i*s,j*s,k*s],[i*s,j*s+w,k*s],[i*s+w,j*s+w,k*s],[i*s+w,j*s,k*s]
      face.back_material = [(255/n*i).round,(255/n*j).round,(255/n*k).round]
      face.pushpull -w

    }
  }
}
```

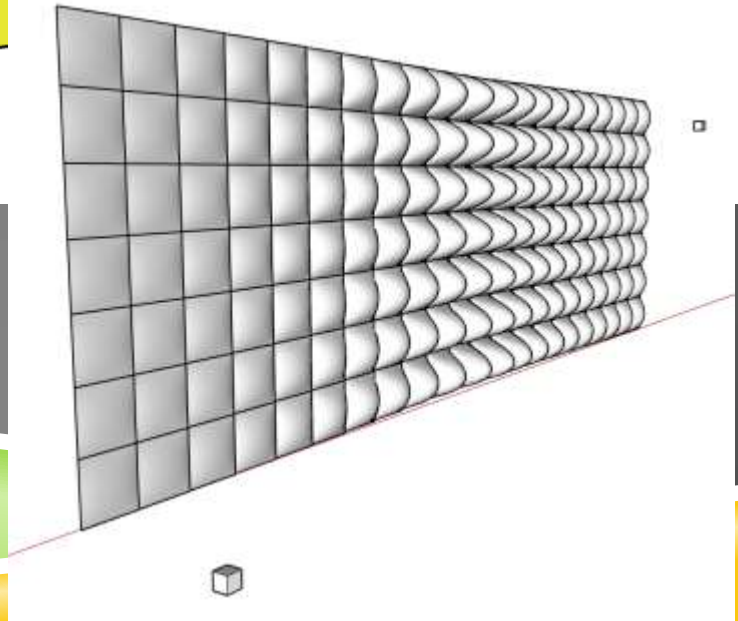
EXAMPLE: USE SINES FOR PANELS



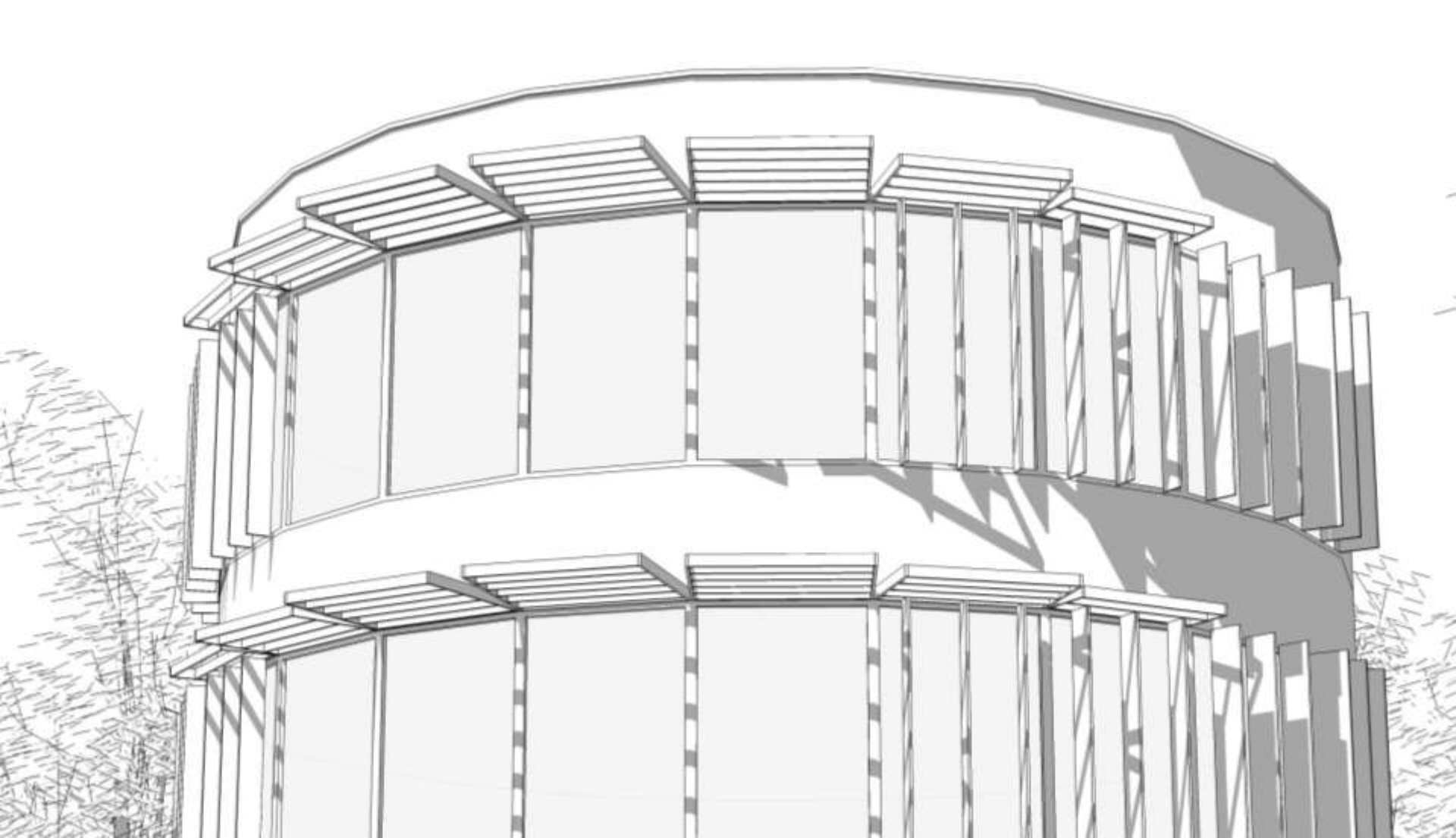
```
ent = Sketchup.active_model.entities

w = 36              # width of square
n = 10              # number of circles
s = w/(n+1).to_f    # spacing

ent.add_face [0,0,0],[w,0,0],[w,w,0],[0,w,0]

(0..n-1).each { |i|
  (0..n-1).each { |j|

    ent.add_circle [s+i*s,s+j*s,0], [0,0,1],
        sin(i/(n-1).to_f*1*PI)*s/5.0+sin(j/(n-1).to_f*1*PI)*s/5.0

  }
}
```

RESPONSIVE DESIGN

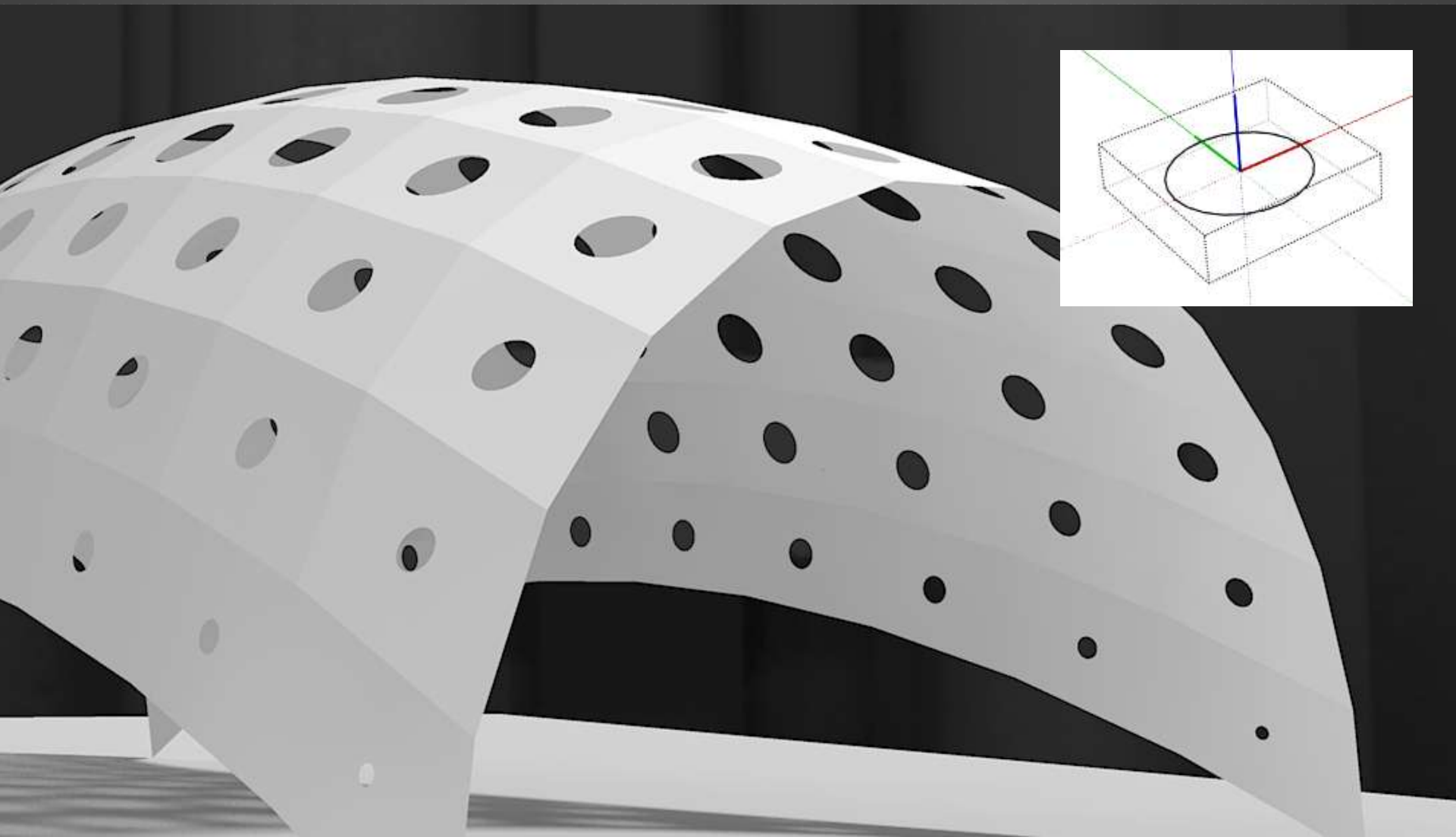




SCRIPTING DYNAMIC COMPONENTS



PLACING COMPONENTS



WANT TO KNOW MORE?

- Get my book (Nov. 14th): www.goo.gl/UJiRa
- Companion website: www.sketchupfordesign.com
- Get the editor plugin: www.sketchupplugins.com

- More about me: www.alexschreyer.net
- Twitter, FB, Google+, …

WILEY